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MANITOBA

—AND THE—



NORTHWEST.

INFORMATION FOR SETTLERS.



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TABLE OF CONTENTS.

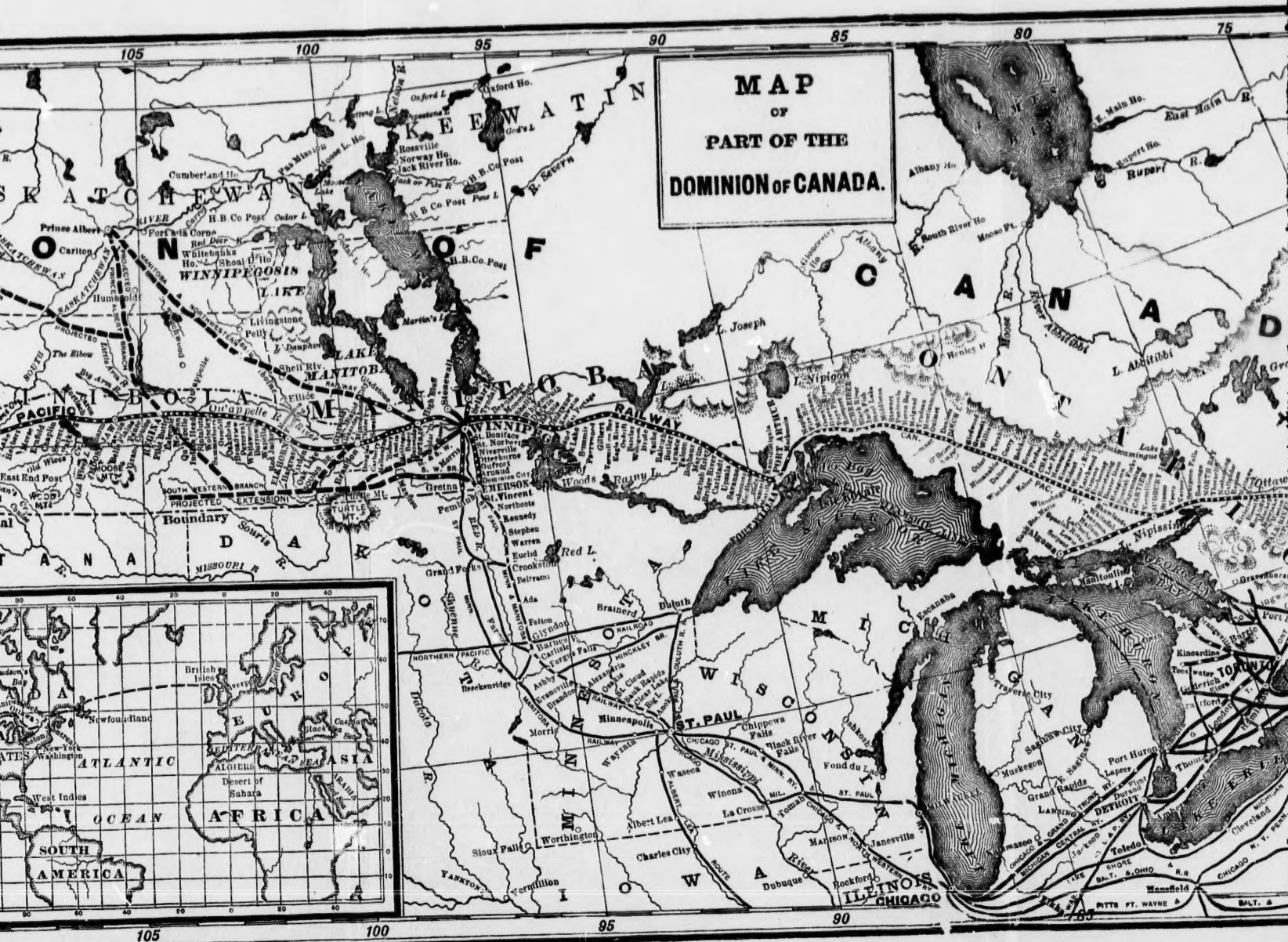
	PAGE.
Province of Manitoba, General Features.....	1
Northwest Territories.....	12
Provisional Districts.....	13
Northwest Prairies, Notes by Professor Wm. Fream.....	15
Notes on Canadian Northwest, by Prof. J. P. Sheldon.....	21
The Canadian Northwest and Its Advantages for Immigration Purposes, by Prof. Tanner.....	25

S.

PAGE.

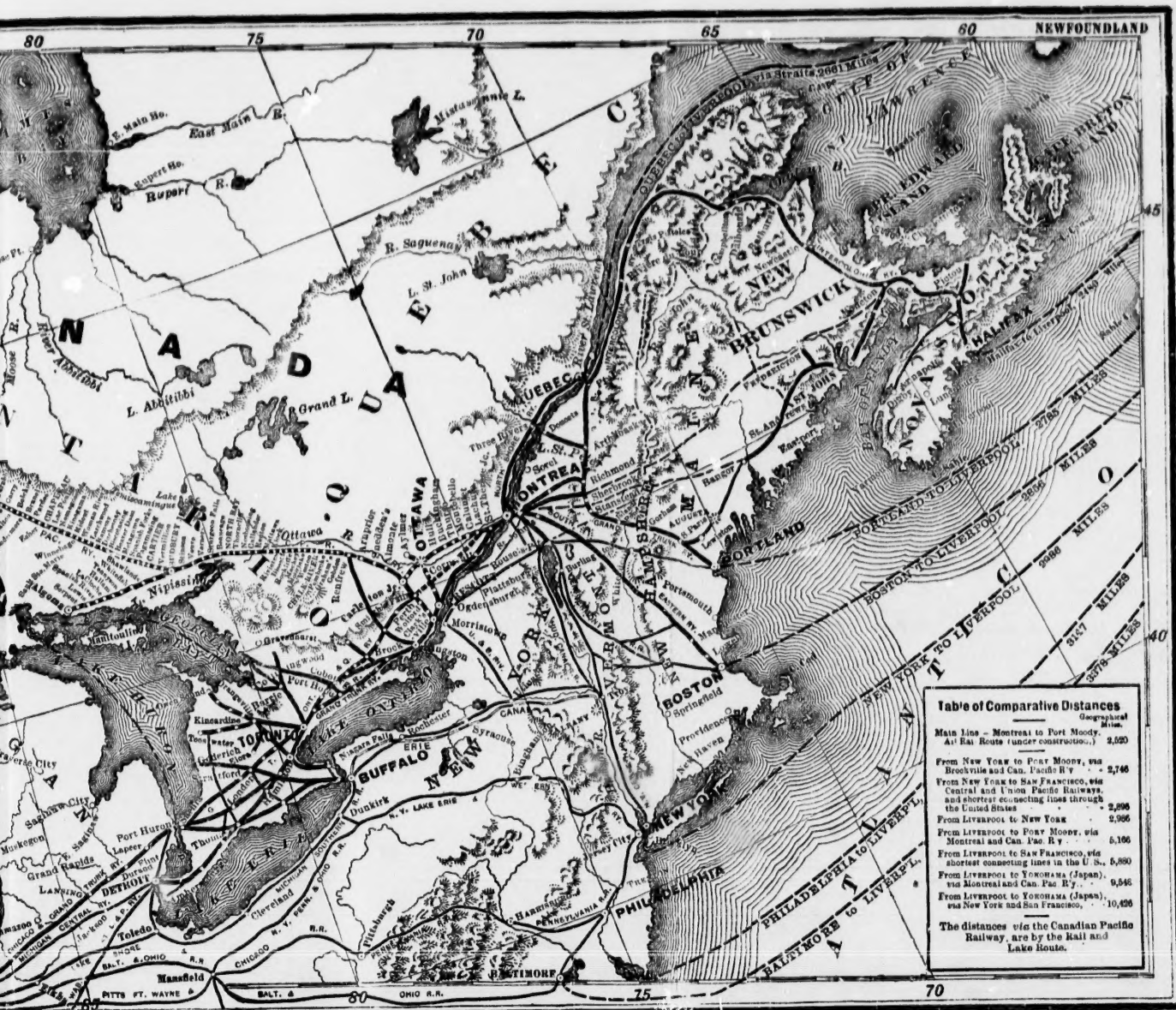
.....	1
.....	12
.....	13
.....	15
.....	21
Purposes,	25





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PROVINCE OF MANITOBA.

GENERAL FEATURES.

The Province of Manitoba is situated in the very centre of the continent, being midway between the Atlantic and Pacific Oceans on the east and west, and the Arctic Ocean and Gulf of Mexico on the north and south.

The southern frontier of Manitoba is about the latitude of Paris, and the line being continued would pass through the south of Germany. Manitoba has the same summer suns as that favored portion of Europe above this line. The contiguous territory, including the great Saskatchewan and Peace River regions, is the equivalent of both the empires of Russia and Germany on the continent of Europe.

Lord Dufferin, on the occasion of his visit in 1877, said in a speech at Winnipeg, when the Province was beginning to be settled: "Manitoba may be regarded as the keystone of that mighty arch of sister Provinces which spans the continent from the Atlantic to the Pacific." And further, that "Canada, the owner of half a continent, in the magnitude of her possessions, in the wealth of her resources, in the sinews of her material might, is peer of any power on the earth."

The British subject, or the incomer from Europe or other parts of the globe, will therefore have the satisfaction of feeling that, in settling in the Canadian North-West, he takes an individual part in building a great nation of the future.

The settler in Manitoba will find schools, colleges, churches, and a kindred society. The social conditions where settlement has taken place leave nothing to be desired. Civilized society in the new world starts in its infancy from the point of the acquired knowledge of the old; and from the point of a first straggling settlement, the building up of a community proceeds with great rapidity. In the course of a single summer villages have sprung up from the previous wild at many points on the Canadian Pacific Railway.

CLIMATE, SOIL AND PRODUCTIONS.

The climate of Manitoba is warm in summer and cold in winter. The summer mean is 65° to 67°, which is very nearly the same as that of the State of New York. But in winter the thermometer sinks to 30° and 40° and sometimes 50° below zero. The atmosphere, however, is very bright and dry, and the sensation of cold is not so unpleasant as that of a cold temperature in a humid atmosphere. Warm clothing, especially in driving, and warm houses are, however, required; that is, houses built to resist the cold.

The climate of the territory contiguous to Manitoba is of the same character, the isothermal line running from Winnipeg nearly due N.W.

Manitoba and the North-West Territory of Canada are amongst the absolutely healthiest countries on the globe, and pleasant to live in. There is no malaria, and there are no diseases arising out of, or peculiar to, either the Province or the climate.

The climatic drawbacks are occasional storms and "blizzards," and there are sometimes summer frosts. But the liability to these is not greater than in many other parts of Canada, or the whole of the United States as far south as New York.

Very little snow falls on the prairies, the average depth being about eighteen inches, and buffaloes and the native horses graze out of doors all winter. In the unusual winter of 1879-80, the snow-fall was deeper, but such was the case all over the Continent. The whole of the Continent of North America is liable to sudden variations and exceptions from ordinary seasons.

The snow goes away and ploughing begins from the 1st to the latter end of April, a fortnight earlier than in the Ottawa region. The Red River opens at about the same time, or a fortnight earlier than the opening of the Ottawa. The summer months are part of May, June, July, August and September. Autumn lasts until November, when the regular frost sets in. The harvest takes place in August, and lasts till the beginning of September.

The soil is a rich, deep, black, argillaceous mould, or loam, resting on a deep and very tenacious clay subsoil. It is among the richest, if not the richest, soil in the world, and especially adapted to the growth of wheat. Analyses by chemists in Scotland and Germany have established this.

The soil is so rich that it does not require the addition of manure for years after the first breaking of the prairie, and in particular places where the black loam is very deep, it is practically inexhaustible. This great richness of the prairie soil has arisen from the gathering of droppings from birds and animals and ashes of prairie fires, which have accumulated for ages, together with decayed vegetable and animal matter, the whole resting on a retentive clay subsoil. It is to the profusion of this stored up wealth in the soil that the agriculturist from older countries is invited.

All the cereals grow and ripen in great abundance. Wheat is especially adapted both to the soil and climate. The wheat grown is very heavy, being from 62 to 66 lbs. per bushel; the average yield, with fair farming, being 25 bushels to the acre. There are much larger yields reported, but there are also smaller, the latter being due to defective farming.

Potatoes and all kinds of field and garden roots grow to large size and great abundance. The same remark applies to cabbages and other garden vegetables. Tomatoes and melons ripen in the open air. Hops and flax are at home on the prairies. All the small fruits, such as currants, strawberries, raspberries, etc., are found in abundance. But it is not yet established that the country is adapted for the cultivation of the apple or pear. These fruits, however, do grow at St. Paul, and many think they will in Manitoba.

For grazing and cattle raising the facilities are unbounded. The prairie grasses are nutritious and in illimitable abundance. Hay is cheaply and easily made from the native grasses; and to the present day the farmers have, for the most part, burnt their straw to get rid of it. Clover, timothy, and other cultivated grasses, answer well.

Trees are found along the rivers and streams, and they will grow anywhere very rapidly, if protected from prairie fires. Wood for fuel has not been very expensive, and coal is now being brought into market; of which important mineral there are vast beds further west, which are being brought into use. The whole of the vast territory from the U. S. boundary to the Peace River, about 200 miles wide to the Rocky Mountains, is a coal field.

Water is found by digging wells of moderate depth on the prairie; the rivers and coolies are also available for water supply. Rain generally falls freely during the spring, while the summer and autumn are generally dry.

The drawbacks to production are occasional visitations of grasshoppers, but Senator Sutherland testified before a Parliamentary Committee that he had known immunity from them for 40 years. This evil is not much feared, but still it might come.

There is reason to believe, however, that if it should come after the country has become thickly populated, it might be met, and in a large measure overcome, as has been proved by experiment in the neighbouring State of Minnesota.

In further reference to the prairie soils of the Canadian North-West Territory, the following important statements are quoted from the work of Sir John Bennet Lawes and Professor J. H. Gilbert, descriptive of their combined experiments at Rothamsted. These statements will everywhere be received with confidence, and they furnish scientific reasons for generally known popular results:

"During the present year (1882), between 40 and 50 samples of soil from the North-West Territory, taken at intervals between Winnipeg and the Rocky Mountains, were sent over to the High Commissioner in London, and exhibited at the recent show of the Royal Agricultural Society of England, at Reading. The soils were exhibited in glass tubes, four feet in length, and are stated to represent the core of soil and subsoil to that depth. Three samples of the surface soils have kindly been supplied to us for the determination of the nitrogen in them.

"No. 1 is from Portage la Prairie, about 60 miles from Winnipeg, and has probably been under cultivation for several years. The dry mould contained 0.2471 per cent. of nitrogen.

"No. 2 is from the Saskatchewan District, about 140 miles from Winnipeg, and has probably been under cultivation a shorter time than No. 1. The dry mould contained 0.3027 per cent. of nitrogen.

"No. 3 is from a spot about 40 miles from Fort Ellice, and may be considered a virgin soil. The dry mould contained 0.2500 per cent. of nitrogen,

"In general terms it may be said that these Illinois and North-west Territory prairie soils are about twice as rich in nitrogen as the average of the Rothamsted arable surface soils; and, so far as can be judged, they are probably about twice as rich as the average of arable soils in Great Britain. They indeed correspond in their amount of nitrogen very closely with the surface soils of our permanent pasture land. As their nitrogen has its source in the accumulation from ages of natural vegetation, with little or no removal, it is to be supposed that, as a rule, there will not be a relative deficiency of the necessary mineral constituents. Surely, then, these new soils are 'mines' as well as laboratories? If not, what is the meaning of the term *a fertile soil*?

"Assuming these soils not to be deficient in the necessary mineral supplies, and that they yield annually in an available condition an amount of nitrogen at all corresponding to their richness in that constituent, it may be asked whether they should not yield a higher average produce of wheat per acre than they are reported to do?

"The exhausted experimental wheat field at Rothamsted, the surface soil of which, at the commencement of the experiments thirty-nine years ago, probably contained only about half as high a percentage of nitrogen as the average of these four American soils, yielded over the first eight years, 17½; over the next fifteen years, 15½; over the last fifteen years (including several very bad seasons), only 11½ bushels; and over the whole thirty-eight years about 14 bushels per acre, per annum.

"So far as we are informed, the comparatively low average yield of the rich North-West soils is partly due to vicissitudes of climate, partly to defective cultivation, but partly also to the luxuriant growth of weeds, which neither the time at command for cultivation, nor the amount of labour available, render it easy to keep down. Then, again, in some cases the straw of the grain crops is burnt, and manure is not returned to the land. Still if there be any truth in the views we have advocated, it would seem it should be an object of consideration to lessen, as far as practicable, the waste of fertility of these now rich soils. At the same time it is obvious that, with land cheap and labour dear, the desirable object of bringing these vast areas under profitable cultivation cannot be attained without some sacrifice of their fertility in the first instance, which can only be lessened as population increases."

YIELDS OF THE GRAINS.

The average yield of wheat in the Province of Manitoba, according to the returns obtained by the Department of Agriculture for the year 1884 (this being a fairly average

year), was, from the threshers' reports, 23.85 bushels per acre, the yield, according to the same reports, being 6,076,122 bushels. The average yield of oats in the same year was 39.95 bushels per acre according to the threshers' reports, the number of bushels threshed being 1,041,539. The average yield of barley on the same authority was 25.50 bushels per acre, and the total yield 1,041,539 bushels. The average yield of peas was 18.62 bushels per acre. The average yield of flax seed was 14.56 bushels per acre. The average yield of potatoes was 192 bushels per acre; of turnips, 422 bushels per acre; of beets, 251 bushels per acre; of mangolds, 385 bushels per acre; and of carrots, 271 bushels per acre. It should be explained that these average yields would be very much higher with fair farming, the farming of many of the present settlers, and especially of the half-breeds, being much below the average in other Provinces. The average of wheat, with fair farming, would be probably over 30 bushels, and the other yields in proportion.

FRUITS, AND WHAT MAY BE GROWN.

All the small fruits, such as strawberries, raspberries, currants, gooseberries, cranberries, etc., are very plentiful in Manitoba; wild grapes are very common, and it is thought from this fact that some of the hardier varieties of cultivated grapes, grafted on the wild stock, might ripen in sheltered places. But this has not been tried, and is not sure. Some varieties of apples have been tried by Mr. Hall, of Headingley, not far from Winnipeg, and he has measurably succeeded. But it has not yet been sufficiently demonstrated that the apple, at least on southern stocks, will succeed in Manitoba. There is, however, the fact of its being largely grown in very much higher latitudes in Russia, and the probability is, that by the use of stocks adapted to the climate, it will succeed in Manitoba.

The fact is, that all kinds of horticulture and tree culture are yet in their infancy in Manitoba. It is, however, to be observed that the Parliament of the Dominion has already passed a law to establish "Experimental Farms," to which the Department of Agriculture is about to give effect.

The hop grows wild, with great luxuriance. Flax is adapted to the soil and climate.

ROOTS AND VEGETABLES.

Both the soil and climate of Manitoba are, in a very high degree, adapted for the growth of the ordinary roots and vegetables of the temperate zone. Potatoes yield very large crops with the simplest culture. The profusion with which this root comes is a surprise to visitors, and the quality is excellent. The same remarks may be made of turnips, beets, mangels and other roots. Cabbages and cauliflowers grow to monster size.

CATTLE AND STOCK RAISING.

Manitoba is particularly favourable for cattle industries. Cows from the Eastern Provinces thrive and grow fat on the native grasses, and farmers are beginning to pay more attention to stock raising, in order to mix their industries. The very great profusion with which potatoes and barley may be grown, has suggested the profitability of swine feeding as a possible valuable if not leading industry of the country. The question of warmth in winter is met by the large quantities of straw which the farmers burn to get rid of; and a very little care in timing the period at which litters would appear, would probably solve the only other question of difficulty in connection with this industry.

COMMUNICATIONS AND MARKETS.

Manitoba has already communication by Railway with the Atlantic seaboard and all parts of the continent; that is to say, a railway train may start from Halifax or Quebec, after connection with the ocean steamship, and run continuously on to Winnipeg; and thence across the plains and through the mountains to the Pacific Ocean. Other railways are chartered, and it is believed will soon be constructed. A portion of the Manitoba and South-Western has already been opened, and further large portions were completed during the summer of 1886.

The section of the Canadian Pacific Railway connecting with Port Arthur places the cereals and other produce of Manitoba in connection with Lake Superior, whence it can

be cheaply floated down the great water system of the St. Lawrence and lakes to the ocean steamships in the Ports of Montreal and Québec; while the railway system affords connection as well with the markets of the older provinces as with those of the United States and those of the Pacific Coast.

The Canadian Pacific Railway, which is now completed, is by far the shortest line, with the easiest gradients, and the fewest and shortest curves between the Atlantic and Pacific Oceans, and constitutes the shortest and, in many respects, the best line for travel and commerce between Great Britain and China and Japan. This line of railway, passing through the fertile instead of the desert portion of the Continent of America, is one of the most important of the highways of the world.

The river system of Manitoba and the North-West is a striking feature of the country. A steamer can leave Winnipeg and proceed *via* the Saskatchewan to Edmonton, near the base of the Rocky Mountains, a distance of 1,500 miles; and steamers are now plying for a distance of more than 320 miles on the Assiniboine, an affluent of the Red River, which it joins at the city of Winnipeg.

The Red River is navigable for steamers from Moorhead, in the United States, where it is crossed by the Northern Pacific Railway, to Lake Winnipeg, a distance of over 400 miles. Lake Winnipeg is about 230 miles in length, affording an important navigation. The Saskatchewan, which takes its rise in the Rocky Mountains, enters this lake at the northern end, and has a steamboat navigation as far as Fort Edmonton, affording vast commercial facilities for those great areas of fertile lands.

The water system between Lake Superior and Lake Winnipeg may be improved and rendered navigable at moderate cost compared with the great commercial interests which will, in the near future, call for it.

At present, a vessel may load at the railway connection at Port Arthur and proceed all the way to Liverpool across the Atlantic Ocean. But the system of transport at present considered the cheapest, is by means of lake and river steamboats and tug propellers with "tows."

With the present arrangements, wheat has been conveyed from Manitoba to Montreal for 30 cents a bushel, whence it can be taken by ocean vessel to Liverpool for 10 or 15 cents more. It is calculated that this wheat can be raised with profit for 50 cents a bushel, thus making a possibility of delivering wheat in Liverpool under 85 cents (*i. e.* about 3s. 6d. *stg.*) per bushel, or 28s. per quarter. Charges and handling may bring it over this price, but the two naked elements of growth and transport are within the figures named.

The farming interests of Manitoba and the North-West are not, however, confined to wheat. Large stock interests are being rapidly developed. There are now about 100,000 head of neat cattle in the newly started "ranches" in Alberta, at the foot of the Rocky Mountains. The progress made in them is giving entire satisfaction. Cattle are already shipped from more distant points in United States territory to Chicago, and thence to England with profit. It may further be remarked, that the conditions are so favourable for transport in the Canadian North-West, that cattle from Montana for the Chicago market enter at Maple Creek, and pass over the Canadian Pacific Railway to its connection with the American railway system, in the State of Minnesota. Horse and sheep ranching are also commencing with very great success.

SYSTEM OF SURVEY AND DIRECTIONS FOR TAKING UP FARMS.

The system of survey or of laying out the land in Manitoba is most simple. Every township is about six miles square, and is divided into sections of one mile square (or 640 acres) each, more or less, the scarcely appreciable difference from the exact area being the result of the convergence or divergence of the meridians forming the eastern and western boundaries, as the township is north or south of one of the standard base lines of survey. These sections are again subdivided into half sections of 320 acres and quarter sections of 160 acres, and further into half quarters, which terms are legal or statutory

definitions of the divisions and subdivisions of land in Manitoba and the North-West Territories of the Dominion.

The townships are laid out upon certain "base lines," about twenty-four miles apart, running east and west, to the depth of two townships, both to the north and to the south, upon each. The lines upon which adjacent townships, surveyed from different base lines, abut, are termed "corrected lines," and upon these all discrepancies of survey are adjusted.

The townships are arranged in tiers running from south to north, and starting from the southern frontier, which is the International boundary line. These tiers are marked on the map with ordinary numerals, thus, 1, 2, 3, etc. Township 1 being on the International boundary or province frontier, which is "the first base line." Township 2 would be six miles further north; Township 3 again six miles north, etc.

The townships are further numbered in what are called "ranges" east and west, from lines called "principal meridians." These numbers are marked on the map in Roman characters, thus: I, II, III, IV., etc.

The first principal meridian starts from a point on the International boundary line about eleven miles west of Emerson. The west "ranges" run in regular numbers to the left or west of that meridian; and the east "ranges" to the right or east of that meridian. Thus, Township 3, Range III., west, would be three townships north of the boundary line, and three townships west of the principal meridian; or, Township 3, Range III., east, would be, in the same way, three townships north to the east of the principal meridian. Anyone with this simple direction could put his finger on any township in Manitoba or any other part of the North-West Territory, of which the number north of the International or first base line might be given, with the number of the range or tier of townships east or west of the first or any of the principal meridians on the map. Any section of a township can be found by its number on the diagram of the map. Any reader, by looking at this and seeing the way in which the numbers run, can instantly put his finger on any section of any township marked on the map. The boundaries of these sections being all laid out on the cardinal points of the compass, east, west, north and south, the section is divided into east half and west half, or north half and south half, whichever way the dividing line is run. These half sections are again divided into quarter sections, such as north-east quarter, north-west quarter, south-east quarter, south-west quarter; these quarters may again be divided in the same way; and these terms, as before stated, are legal or statutory definitions of land in Manitoba and the North-West Territory.

Under this very simple but scientific method of arrangement, any township, or section, or subdivision of a section, can be instantly and unerringly described. A transfer or conveyance of property may likewise be made by deed in as few words as any ordinary bill of parcels, and that with perfect accuracy and absoluteness of definition.

The settler from the United Kingdom will at first find the nomenclature of this system of survey a little new and strange; but he will, on slight acquaintance with it, become charmed with its simplicity.

The surveyed lines are marked on the ground itself by iron and other kinds of monuments and posts at the corners of the divisions and subdivisions; and, so soon as the settler makes himself acquainted with these, he will instantly understand the position and extent of his own farm on the prairie, or of any other in the country. Or, when travelling in any part of the country, these posts will tell him at a glance exactly where he is, so that he cannot get lost in any surveyed district.

Distances on the map, in miles, may be ascertained approximately by counting the townships to be passed over and multiplying the number by six. The unit of the townships' surveys is the statute mile or section of 640 acres, all the townships being made six statute miles or sections square, as nearly as it is possible to make a series of squares on the face of a globe.

FREE GRANTS AND PRE-EMPTIONS.

A settler may obtain a grant of 160 acres of land free, on even-numbered sections, on condition of three years' residence and cultivation, and payment of an office fee amounting to \$10 (£2 stg.); and he may obtain the adjoining portions of sections by "pre-emption" or otherwise, at the rate of \$2.00 (8s. stg.) or \$2.50 (10s. stg.) per acre. The privilege of pre-emption, however, will cease after January 1st, 1887.

All intending settlers should take notice that they are entitled to enter at the nearest Government Land Office for a free grant of a quarter section in any even-numbered unoccupied land in Manitoba or the North-West; whether or not such even-numbered section is near a railway, or comes within the reserves of any of the Colonization companies.

DIRECTIONS RESPECTING LAND.

A settler should obtain from the Local Dominion Lands Agent general information as to lands open for settlement. The marks on the map show certain lands taken up, and therefore not available for settlement. Of course, other lands may have been taken up since those marked "taken" on the map. Exact information can, therefore, only be obtained at the Local Land Offices.

All even-numbered sections (except 8 and three-quarters of 26, which are Hudson Bay Company Lands) are open for entry as free homesteads, or as pre-emptions, unless already taken up by settlers.

Odd-numbered sections (with the exception of 11 and 29, which are School Lands) for 24 miles on each side of the Canadian Pacific Railway, may be generally stated to be Railway Lands, purchasable from the Company, and not open for homestead and pre-emption. There are also other Railway Lands, which have been appropriated in aid of similar undertakings. Beyond the limits of the land granted to such enterprises odd-numbered sections may, if surveyed, be purchased direct from the Government, on terms stated in the regulations referred to.

WHAT CAPITAL TO BEGIN WITH.

A settler in Manitoba may commence on comparatively small capital; that is, enough to build one of the inexpensive houses of the country, to buy a yoke of oxen and a plough, his seed grain, and sufficient provisions to enable him to live for one year, or until his first crop comes in. With a little endurance at first, from this point he may attain to a position of plenty and independence.

On the other hand, a settler may take with him to Manitoba or the North-West Territories considerable capital, and invest it in large farming operations, either in wheat growing or stock raising, both of which he will probably find very profitable.

The settler requires either a team of horses or yoke of oxen, a waggon or a cart, a plough and harrow, chains, axes, shovels, stoves, bedsteads, etc., which he can obtain for about \$300.00, or £60* stg. A primitive house and stable may be built for £30 more. The cost of necessary provisions for a family would be from £18 to £20. The cost of these several items may vary with circumstances, either being more or less, the prices being affected by the cost of transport and railway facilities; but a settler who goes on his farm sufficiently early to plant potatoes and other crops may live at very little cost.

Or the sum of £125 stg., which is in round numbers about \$600.00 of Canadian currency, would enable a farmer to begin on a moderate scale of comfort. The sum would be divided, in some cases, as follows:

* The £1 sterling is set down in round figures at \$5.00 for convenience, and is sufficiently exact for the purpose of this paper.

One yoke of oxen, \$120.00; one waggon, \$80.00; plough and harrow, \$25.00; chains, axes, shovels, etc., \$30.00; stoves, bedsteads, etc., \$60.00; house and stable, \$150.00; provisions, \$135.00; in all \$600.00, or £120 stg. The above prices are subject to variation for the reasons above stated.

Of course, a capital of £200 (or \$1,000.00) would enable a farmer to start in better style and with more comfort; but many have started with much less, and are now well off. For instance, the Red River cart, which costs from fifteen to twenty dollars, and one ox, might do all the teaming required on a small farm to begin with, and after the first "breaking" one ox could do all the plowing required for a family.

The German Mennonite settlers who came to Canada from Southern Russia a few years ago—that is, the poorer families of them—started with very much less; and they are to-day very prosperous, and raise large crops of grain, besides growing flax, of which they export the seed. They are also well supplied with live stock.

The Mennonite outfit of one family, averaging five persons, consisted of one yoke of oxen, one cow, one plough, one waggon and one cooking stove—the whole obtained at a cost of \$270.00, or £54. In the case of the poorer, two families clubbed together to use one outfit. The cost of provisions for the subsistence of one family for a year was \$93.00 (£18 15s.), the provisions consisting almost wholly of flour, pork and beans. No money was expended on the buildings in which they first lived. These consisted for the first year of brush, laid sloping on poles and covered with earth. This fact is stated to show from how small a beginning a settler may successfully start and attain plenty; but, seeing that the log or frame house of the country can be built at so moderate a cost, probably few settlers from the United Kingdom would be willing to do as the Mennonites did. Many a man will, however, make a hard struggle for independence, and find both his labour and his hardships sweetened by the consciousness of the daily steps he is taking towards that end. It may further be mentioned that, for some years to come, there will be railways and public works in progress, on which the poorer settlers may work for a part of the time at good wages, and so obtain means to tide over the first difficulties of a settler's life with more comfort.

By the Amended Dominion Lands Act a settler is held to have performed his homestead duties if he has been a *bona fide* resident within a radius of two miles from his homestead. But, within the first year after the date of his entry, he must have broken and prepared for crop not less than ten acres on his homestead. Within the second year he must have cropped these ten acres, and broken and prepared for crop not less than fifteen acres additional, making in all twenty-five acres under crop in the third year; and also not less than fifteen acres additional broken and prepared for crop for the next year. And he must, three months before applying for his patent, have erected a habitable house on his homestead, and resided in it. The settler must not have been continuously absent for more than six months in any one year.

HINTS FOR SETTLERS IN MANITOBA.

The settler from older countries should be careful to adapt himself to those methods which experience of the country has proved to be wise, rather than try to employ in a new country those practices to which he has been accustomed at home.

For instance with respect to ploughing, or, as it is called, "breaking" the prairie, the method in Manitoba is quite different from that in the Old Country. The prairie is covered with a rank vegetable growth, and the question is how to subdue this, and so make the land available for farming purposes. Experience has proved that the best way is to plough not deeper than two inches, and turn over a furrow from twelve to sixteen inches wide.

It is especially desirable for the farmer who enters early in the spring to put in a crop of oats on the first "breaking." It is found by experience that the sod pulverizes and decomposes under the influence of a growing crop quite as effectually, if not more so, than when simply turned and left by itself for that purpose. There are also fewer weeds, which is of very great importance, as it frequently happens that the weeds which grow

soon after breaking are as difficult to subdue as the sod itself. Large crops of oats are obtained from sowing on the first breaking, and thus not only is the cost defrayed, but there is a profit. It is also of great importance to a settler with limited means to get this crop the first year. One mode of this kind of planting is to scatter the oats on the grass, and then turn a thin sod over them. The grain thus buried quickly finds its way through, and in a few weeks the sod is perfectly rotten. Mr. Daley, near Bigstone City, in the vicinity of Bigstone Lake, sowed ten acres of oats in this way. He put two bushels and a peck to an acre. In the fall he harvested 426 bushels of oats, which he found to be worth enough to pay for the "breaking" and give him \$75.00 besides. This is practical, reported experience. There is also testimony from other farmers to similar effect. Flax is a good crop to put in on the first breaking. It yields well, pays well, and rapidly subdues the turned sod. A practice which has been followed by other settlers, and which experience has proved to be successful, is to turn the sod two inches deep, and then by the device of removing one furrow and ploughing up from the bed it occupied a sufficiency of earth to make a covering of the ploughed sods, an admirable seed bed is obtained.

The settler should plant potatoes the first year for his family use, and do other little things of that kind. Potatoes may be put in as late as June the 20th. All that is required is to turn over a furrow, put the potatoes on the ground and then turn another furrow to cover them, the face of the grass being placed directly on the seed. No hoeing or further cultivation is required except to cut off any weeds that may grow. Very heavy crops of fine potatoes have been grown in this way.

Before the prairie is broken the sod is very tough, and requires great force to break it; but after it has once been turned the subsequent ploughings are very easy from the friability of the soil, and gang ploughs may easily be used.

On account of the great force required to break the prairie in the first instance, many prefer oxen to horses. There is a liability of horses becoming sick in Manitoba when first taken there from the older parts of the Continent, until they become accustomed to the new feed and the country, especially if they are worked hard and have not sufficient shelter. Against this, however, it is to be observed that the ranches are now beginning to produce horses in every way adapted to the country; and experience has brought better methods into practice.

It is for this reason that oxen, which are not liable to the same casualties as horses, are suited for breaking the prairie. A pair of oxen will break an acre and a half a day, with very little expense for feed. Mules have been found to do very well, and they are considered well adapted for prairie work. On the larger farms steam is beginning to be used, but the question of steam cultivation is not yet settled.

WHAT TO TAKE TO MANITOBA.

The settler, in going to Manitoba from the Old Country, should be cautioned against burdening himself with very heavy luggage. The weight which he is allowed to carry without paying extra on an ordinary emigrant ticket is 150 pounds. Freight charges for luggage over this weight are high. Tools and implements, stoves, tables or bedsteads, or heavy, clumsy things of that description, can be bought in Manitoba more cheaply than they can be carried. Tools and implements specially adapted to the country can be purchased cheaply in Manitoba, but artisans or mechanics having special tools for their handicrafts will, of course, take them with them. The exception to this general direction is that parties may sometimes hire a car for their effects, and thus take their whole stock and furniture with them more cheaply than they can be replaced; but the adaptation of any implement to Manitoba should be well ascertained before it is taken. All clothing, also bedclothing, and cases or covers of beds, should be taken to be filled after arriving in Manitoba.

ROUTES, AND WHEN TO GO.

The intending settler from the United Kingdom or the Continent of Europe may buy a ticket direct to Winnipeg, or almost any part of the North-West, at the office of the

steamship lines. He may go to Quebec, and thence by the Canadian Pacific Railway; or he may go by way of the Great Lakes to Thunder Bay, where he will again take the railway to Winnipeg. This line is the shortest, and wholly within Canadian territory, and the settler who takes this route is free from the inconvenience of all Customs examination required on entering United States territory, or again on entering Manitoba from the United States. The fares are very cheap from Europe to Manitoba, in view of the distance.

In cases where it is an object for the emigrant to have an assisted passage, this is afforded by an arrangement between the Government of Canada and steamship companies whose lines ply to Canadian ports. Application should be made to agents of the Government or to the steamship agents for particulars of the assisted passage arrangement.

The fares from Quebec and other points on the seaboard to Winnipeg may be obtained at any of the Canadian Government agencies or steamship agencies. They have been fixed at prices so low, under arrangement with the Government, as really to constitute an assisted passage.

Very favourable rates are afforded for immigrants' and settlers' effects via the Canadian Pacific Railway.

CANADIAN PACIFIC RAILWAY LANDS.

In view of the fact that the Canadian Pacific Railway Company have obtained from the Government of Canada a grant of 25,000,000 acres of land to assist in the building of the Railway, it becomes important for the settler to understand the terms on which they offer their lands for sale.

As already stated, the odd-numbered sections of townships (with the exception of 11 and 29, which are school lands) for twenty-four miles on each side of the Railway, may generally be stated to be railway lands. The Company will have lands apportioned to them in other portions of the North-West, which will be made known from time to time. Under their advertised regulations they offer their land at \$2.50 (10s. stg.) an acre, and upwards, with conditions requiring cultivation. Lands will also be sold by the Company without conditions of cultivation. The purchaser, by paying cash, may get a deed of conveyance at the time of purchase; or he may pay one-sixth in cash, and the balance in five annual instalments, with interest at six per cent. Or payment may be made in Land Grant Bonds, which will be accepted at 10 per cent. premium on their par value and accrued interest.

This Company has a system of rebates in favour of the settler, in all cases of land bought on conditions of cultivation. This rebate is from \$1.25 to \$3.50 (5s. to 14s. stg.) per acre.

It follows from these regulations that if a settler buys land from this Company at \$2.50 (10s. stg.) per acre, and gets a rebate of \$1.25 (5s. stg.) per acre, he is in exactly the same position, in the case of a purchase of a half section, as if he obtained a free grant from the Government of 160 acres, and paid for the other quarter section a pre-emption rate of \$2.50 (10s. stg.) per acre.

These prices, the intending settler should understand, are very cheap. The lands so sold by the Company are probably worth \$10.00 or \$20.00 (£2 or £4 stg.) per acre, and more in many cases. But the interest of the Company is less to sell at high prices, land which might be held for speculation, than to attract settlers; who, by affording passenger traffic and freight from the produce of their cultivated farms, are very much more important for the Company than simply high prices for lands in the absence of settlement. The great interest of the Company is to obtain settlers, and to content them by affording them every possible facility.

It will appear from a comparison of the conditions of the Canadian Pacific Railway Company with the Dominion Land Regulations, that if a family of four adults desire to settle together, they may obtain a really large estate on very moderate terms. For instance, each of the four members of the family may settle on the four free homesteads,

of 160 acres each, in any even-numbered unoccupied section. Each may then purchase another 160 acres at \$2.50 (10s. stg.) per acre from the Canadian Pacific Railway Company in the adjoining odd-numbered sections. The settlers, while building on the homesteads and making cultivation thereon, would be able within the time mentioned also to cultivate the whole or the greater part of the Canadian Pacific Railway lands. The office fee for entering (Government homesteads is \$10.00 (£2 stg.)) A family of four could, in this way, in four years obtain a large estate of 1,280 acres of probably the richest wheat-growing land in the world at a merely nominal price, and thus secure a position not only of comparative but of substantial wealth. Farmers with sons can with great advantage avail themselves of these conditions, and have the advantages of neighbourhood in settling together.

In cases where it is an object for families with means to take up and farm more extensive tracts of land, the regulations would also admit of this. For instance, two brothers might take up as free homesteads two quarter sections, of any (Government lands, and pre-empt the other two quarter sections, thus obtaining a whole section (or 640 acres) for their homesteads and pre-emptions. They could then purchase the whole of each of the four adjoining odd-numbered sections of railway lands, and thus obtain between them a large estate of 3,200 acres. By cultivating the odd sections and getting the rebate, this estate could be purchased on exceedingly moderate terms. The actual settler for some years to come will have large tracts of land to choose from. The arrangement we have indicated is especially desirable for settlers from England with means.

The land policy of the Government of Canada, combined with the advantages offered by the Canadian Pacific Railway Company, is the most liberal of any on the Continent of North America.

HUDSON BAY COMPANY'S LANDS.

Section No. 8 and three-quarters of Section No. 26 in the greater number of townships* are Hudson Bay Company's lands, and all settlers must be careful not to enter upon them unless they have acquired them from the Company. The prices vary according to locality. Mr. C. J. Brydges is the Land Commissioner of the Company. His official residence is at Winnipeg, Man., and applications may be made to him.

Under agreement with the Crown, the Hudson Bay Company are entitled to one-twentieth of the lands of the "Fertile Belt," estimated at about seven millions of acres.

No prices can be quoted here for the lands of this Company. Their object is to obtain for them fair, current market prices.

SCHOOL LANDS.

Sections No. 11 and 29 in every township are school lands; that is, the proceeds of their sale are to be applied to the support of education. They are not obtainable at private sale. When disposed of, it will be by public competition at auction. All squatters on these lands therefore, will have to pay for them the price they bring by auction when sold, or they will pass by such sale out of their hands.

LANDS AT PRIVATE SALE.

The settler may sometimes find it convenient to buy lands partly improved, with buildings and fences upon them, of private proprietors. It very frequently happens that half-breed or other lands may be obtained on moderate terms.

*In every fifth township the Hudson Bay Company has the whole Section of 26.

THE NORTH-WEST TERRITORIES.

GENERAL FEATURES.

The Province of Manitoba extends the North-West Territory of Canada. It is bounded on the south by the 49th parallel, which divides it from the United States. It follows this line west to the base of the Rocky Mountains, which it touches at very nearly the 115th degree of west longitude, and takes a north-west trend along the base of the Rocky Mountains until it comes in contact with the Territory of Alaska, and proceeds thence due north to the Arctic Ocean.

This vast territory contains great lakes and great rivers. The Mackenzie is one of the greatest rivers in the world, and empties into the Arctic Ocean. Its estimated length is 2,500 miles, including the Slave River, which is a part of its system. This river is for the most part navigable, except at the base of the Rocky Mountains, where it is interrupted by cascades. The country through which it runs is rich in mineral deposits, including coal. The Peace, another great river of the North-West, has an estimated course of 1,100 miles, draining a country containing vast agricultural and mineral resources.

Another great river which takes its rise in the Rocky Mountains is the Saskatchewan, which empties into Lake Winnipeg, having a total length of about 1,500 miles. This river is navigable from the lake to Fort Edmonton, and it drains an immense agricultural region. There are numerous other rivers in this territory, such as the Nelson, the Churchill, the Winnipeg and the Assiniboine.

The lakes are the Great Bear Lake, the Great Slave Lake, the Athabasca, Lake Winnipeg, and others. The Great Bear Lake contains an area of 14,000 square miles. The Great Slave Lake has a length from east to west of 300 miles, its greatest breadth being 50 miles. The Athabasca Lake has a length of 230 miles, averaging 14 miles in width, having, however, a very much greater width in some places. Lake Winnipeg has a length of 230 miles, with a breadth of 55 miles, but its shape is very irregular. There are numerous other lakes of large size in the North-West.

The Nelson River drains the waters of Lake Winnipeg into Hudson Bay; and the extent of its discharge may be imagined from the fact that this Lake receives the waters of the Red River of the North, as well as of the River Winnipeg, the Saskatchewan and others.

The mouth of the Nelson River is nearer to Liverpool than is New York, and the navigation, it is believed, is continuously open for over four months in the year. Efforts are, therefore, already being made to render available this near communication from the very centre of the continent with the port of Liverpool.

The Churchill River, which takes its rise near the base of the Rocky Mountains, and flows into Hudson Bay, is likely to become, in the near future, of great importance, as opening up the immense wheat and cattle raising areas of the Peace River region, connecting them with Hudson Bay navigation. At the mouth of the Churchill River is found one of the best harbours in the world; and this may give it an advantage over the Nelson, there being a sand-bar at the mouth of the latter. The Canadian Government is now engaged in obtaining more definite information with respect to Hudson Bay navigation.

Generally speaking, a line drawn from the south-east corner of the Lake of the Woods, and running north-west to the height of land, divides this territory into two nearly equal portions, and for the most part follows the course of the isothermal lines. A diagonal line thus drawn also roughly separates two geological formations, the southern half being generally favorable for agricultural purposes. The portion north of this line comprises the wooded portion of the North-West. It is rich in mineral and other resources, and undoubtedly, as the country comes to be more thickly settled, will be cultivated in parts.

A remarkable feature of this great extent of territory is its division, along lines running generally north-west and south-east, into three distinct prairie steppes, or plateaux as they are generally called. The first of these is known as the Red River Valley and Lake Winnipeg Plateau. The width at the boundary line is about 52 miles, and the average height about 800 feet above the sea; at the boundary line it is about 1,000 feet. The first plateau lies entirely within the Province of Manitoba, and is estimated to contain about 7,000 square miles of the best wheat-growing land on the continent or in the world.

The second plateau or steppe has an average altitude of 1,600 feet, having a width of about 230 miles on the National boundary line, and an area of about 105,000 square miles. The rich, undulating park-like country lies in this region. This section is specially favourable for settlement, and includes the Assiniboine and Qu'Appelle Districts. The Bell Farm is situated in the Qu'Appelle District.

The third plateau or steppe begins on the boundary line at the 101st meridian, where it has an elevation of about 2,000 feet, and extends west for 465 miles to the foot of the Rocky Mountains, where it has an altitude of about 4,200 feet, making an average height above the sea of about 3,000 feet. Generally speaking, the first two steppes are which are most favourable for agriculture, and the third for grazing. Settlement is proceeding in the first two at a very rapid rate; and in the third plateau it is beginning, while numerous and prosperous cattle ranches have been established.

PROVISIONAL DISTRICTS.

The Dominion Government, by Order-in-Council, has formed out of this territory for postal purposes and for the convenience of settlers, four provisional districts, namely respectively *Assiniboia*, *Saskatchewan*, *Alberta*, and *Athabasca*.

DISTRICT OF ASSINIBOIA.

This district comprises an area of about 95,000 square miles. It is bounded on the south by the International boundary line, on the east by the western boundary of Manitoba, on the north by the 9th Correction line of the Dominion Lands System of Survey into Townships which is near the 52nd parallel of latitude. On the west it is bounded by the line dividing the 10th and 11th Ranges of Townships west of the 4th initial meridian of the Dominion Lands Survey.

The Valley of the Qu'Appelle is in the District of Assiniboia, being on the second plateau or steppe of the continent, reaching from Red River to the Rocky Mountains. This valley is a favoured part of the North-West, and settlement in it is proceeding with surprising rapidity. The Dominion Government has an immigrant station at Troy, and this district has been selected for the large farming experiment known as the "Bell Farm." This scheme has features which have interest beyond a simple private enterprise on a very large scale. The experiment embraces a scheme of a wheat farm of a hundred square miles, or 64,000 acres, but so divided as to make it also a colonizing scheme, the intention being to sell the whole out to the workers after a few years' operations. A section of one square mile of 640 acres is divided into three equal portions of about 213 acres, and the cultivation of this third of a section is placed in the hands of one man. Comfortable houses and stables are built at the corners of these third sections in such way that four houses and four stables come together, making, as it were, a little village on the road allowance. A man and his team are able to cultivate two-thirds of this apportionment, leaving one third fallow every year, thus leaving the whole fallow once in three years, as well for recuperation as to destroy weeds, some kinds of which are apt, with the best cultivation, to make their appearance in wheat. The harvesting is done by the self-binder, and the threshing by the powerful steam machinery of the farm. The work is thoroughly systematized; and the whole of the buildings were about to be connected by telephone shortly after the writer of these lines left this farm a few months ago. The average crop of wheat in 1883 was 21 bushels to the acre, much of this grown on the first turning of the soil. The yield in 1884 was very bountiful, and much over that of the previous year. In order to save teaming very large weights of wheat, it is put in large wooden tanks or receivers spread over the farm, as it comes from the powerful steam threshers which are used. The wheat produced is of the very highest quality, and often weighs 62 lbs to the bushel.

Through the plain of Calgary flow the clear waters of the Bow River, which a short distance from the town is joined by its tributary, the Elbow. The excellence of the land in this district is testified by the number of flourishing farms on Pine Creek, on Fish Creek, and on the banks of the Elbow River, and the plentiful supply of good water, the abundance of fuel, and the kindly climate must continue to make this an attractive region to settlers. A journey northward by stage, occupying five days, is necessary to reach Edmonton, the headquarters of the Saskatchewan trade of the Hudson's Bay Company.

The Benbecula colony, settled by the crofters from the estate of Lady Gordon-Cathcart, is in this district, about ten miles south of the Wapella railway station, and the results which it has exhibited are worthy of notice. An advance of £100 stg. was made to each crofter, to enable him and his family to emigrate and also to settle on land, security being taken on the land itself for repayment of the advance, with interest at 6 per cent. This security being on a farm of 160 acres, is of course more than ample. The colony has been decidedly successful. Professor Tanner visited it in 1883, and again in 1884. Speaking of these colonists, when he saw them, shortly after their arrival he said: "They soon (after their arrival in May) commenced ploughing the turf of the prairie, simply covering in their potatoes with the fresh-turned turf. They also sowed their wheat and oats upon the newly-turned sod. Very rough style of farming many will be disposed to say; still it must be remembered that they had no choice, and the results caused them no regret. Within eight weeks from the time of planting the potatoes they were digging their new crop, and before two weeks had passed I had some of those potatoes for dinner, and I do not hesitate to say that for size, flavour and maturity, they were excellent. The roughly sown wheat and oats were then progressing rapidly, and a good harvest awaited their ingathering. During the summer they had raised a better class of house, they had secured a supply of food and seed for another year, and their settlement was practically completed. A total area of about 3,200 acres had thus been secured, the quality of the land was good, the surface was gently undulating over the entire area, and it was as nicely wooded as many a park in the Old Country. The change in their position had been so quickly accomplished, that I can readily imagine that they must at times have wondered whether it was a dream or a reality. Was it really true that they were no longer small tenants and labourers struggling against pecuniary difficulties which well nigh tempted them to rebel, and that they had so suddenly become the owners of happy homes and nice farms, without the shadow of a care or a fear as to their future support? It was true, and the deep gratitude manifested by those settlers towards Lady Gordon-Cathcart no words of mine can adequately describe. It was obviously unnecessary to inquire whether they were happy in their new homes; but I did ask one of the party whether he had sent home to his friends a full account of the place. 'Why, sir,' he replied, 'if I only told them half, they would never believe me again.'"

Professor Tanner's report of his second visit in 1884 was in every way confirmatory of the first. These results show that capital may be safely as well as beneficently advanced with suitable management, to persons who are able to shift and work for themselves on farms in the Canadian North-West.

There are considerable numbers of English gentlemen settled in this district, in the neighbourhood of Moose Mountain, who express themselves very well pleased with the country and its capabilities, but who yet want railway communications to satisfy their needs. This will probably be afforded during the coming year by the Manitoba and South-Western extension.

Many towns and villages have sprung up within a year with surprising rapidity, on the line of the Canadian Pacific Railway, in the district of Assiniboia. Among these may be mentioned Broadview, Indian Head, Qu'Appelle, Regina (the capital), Moose Jaw, Swift Current and Medicine Hat.

THE NORTH-WEST PRAIRIES.

NOTES BY WILLIAM FREEM, B.Sc. LOND., F.L.S., F.G.S.,

THE YOUNG CITIES OF THE PRAIRIE.

The proximity of a railway is an important factor in the marketing of agricultural produce, and it is not surprising to find that towns have sprung up all along the line of the Canadian Pacific Railway, but it is surprising to reflect on the rapidity with which some of these towns have grown in size and importance, and how neat, business-like, and well laid out many of them appear to be. As some are the centres of leading agricultural districts, it appears desirable to give a brief account of a few of the leading ones, taking them in the order in which they are reached by the traveller in his journey westward from Winnipeg. The municipal organization of some of these towns is very complete, and remarkably so when it is borne in mind that most of them are not more than two or three years old; they afford a strong testimony of the energy and capacity for business which characterize the dwellers in the North-West.

Fifty-six miles west of Winnipeg the town of Portage La Prairie is reached. It lies near the western boundary of the first steppe, and occupies the central position of the richest wheat growing land in the Province of Manitoba. It commands a very advantageous position, for, besides being on the main line of the Canadian Pacific Railway, it is the south-eastern terminus and headquarters of the Manitoba and North-western Railway. This line is projected to run in a north-westerly direction to Prince Albert, on the Saskatchewan River, a distance of 430 miles from Portage La Prairie; about 80 miles of the track are now in operation, the stations proceeding from Portage La Prairie being Macdonald, Westbourne, Woodside, Gladstone, Neepawa, Bridge Creek, and Minnedosa. The last named place is about 30 miles due north of Brandon, a rising town on the Canadian Pacific Railway, and is situated on a tributary of the Assiniboine River.

Between Portage La Prairie and Carberry, fifty miles to the west, the line ascends the gentle slope of the first escarpment, and Carberry, 106 miles from Winnipeg, is near the eastern border of the second prairie steppe. It is the county town of Norfolk, and is the centre of a fertile wheat-growing area called the "Beautiful Plains." Although the building of the town was only commenced less than two years ago, it now has a population of over 400, and already is an important centre for the shipment of wheat.

Twenty-seven miles beyond Carberry the traveller arrives at Brandon, a beautiful town situated at the crossing of the Assiniboine River. Its fine buildings and broad regular streets cannot fail to impress the visitor, and it strikes one at once as a town at which it would be pleasant to dwell. It is the market centre for a considerable area of country, extending northward as far as Minnedosa, and southward to Turtle Mountain, and there is much excellent land in the neighborhood. Near the railway are several large elevators for the reception of wheat grown in the district.

Brandon is 133 miles west of Winnipeg, and 47 miles further on the rising town of Virden is reached, whence a further run of 39 miles places the traveller at Moosomin, 219 miles from Winnipeg, the line leaving the general trend of the Assiniboine River valley in the vicinity of Virden. West of Moosomin, near Wapella, the track crosses the Indian trail from Moose Mountain in the south-west to Fort Ellice, on the Assiniboine River, in the north-east.

Broadview, 264 miles west of Winnipeg, and 45 miles beyond Moosomin, is another well laid out town, and the commercial centre of an excellent farming country. It occupies a pretty situation near the head of Wood lake, and workshops of the railway are established here.

Proceeding westward the line skirts the southern boundary of the Qu'Appelle valley, and 43 miles from Broadview the traveller comes to Indian Head, the station of the famous Bell Farm, which is 312 miles from Winnipeg. The town of Indian Head, which takes its name from the fact of the Indian Agency for the Qu'Appelle district being situated here, rejoices in a charming situation, possesses excellent natural drainage, and is the site of the finest brick hotel in the North-West. Eight miles north of the town are the fishing lakes of the Qu'Appelle River, and a beautiful lake may be visited in a journey of six miles south of the town.

The town of Qu'Appelle is only 8 miles beyond Indian Head, and is situated south of the fort of the same name. The Qu'Appelle river is exclusively north of the railway track, and it flows from west to east, pouring its waters finally into the Assiniboine river, near Fort Ellice. The town of Qu'Appelle was, until recently, called Troy, and the local authorities, in adorning its streets with poplar trees, have set an example which deserves imitation in all the prairie towns. The Government Immigration Buildings are at Qu'Appelle, and in the neighborhood of the town are numbers of excellent farms, both large and small.

After leaving Qu'Appelle, the next place of importance is Regina, 32 miles to the west, and 356 miles from Winnipeg. Regina is not only the capital of the Provisional District of Assiniboine, but it is the metropolis of the North-West Territories. It is the headquarters of that fine body of men, the North-Western Mounted Police, who are entrusted with the maintenance of law and order over an enormous area, and, as the seat of Government of the North-West, there may also be seen at Regina the Indian and Departmental Offices, and the residence of the Lieutenant-Governor.

At Moose Jaw, 42 miles beyond Regina, and 398 miles from Winnipeg, a very populous town is reached at the confluence of the Moose Jaw and Thunder Creeks, tributaries of the Qu'Appelle River. The town is neat and trim, its streets and avenues are well planned, many of its buildings are handsome and substantial, and the growth of its population has been remarkably rapid, even for a prairie town.

Forty-two miles west of Cypress is Maple Creek, 697 miles beyond Winnipeg, and more than 1,000 miles from the shores of Lake Superior. The creek takes its name from the quantity of ash-leaf maples which clothe its banks, and it is not unlikely that a considerable town may arise at this spot, inasmuch as the ranchers of Montana, the nearest of the States of the Union, find that they can save both time and money by taking their cattle through Canadian territory, driving them first to Maple Creek, whence they are taken by rail to Winnipeg, and then southward to Chicago. About thirty miles south-west of Maple Creek an Indian trail leads to Fort Walsh, one of the chief barracks of the North-Western Mounted Police.

Medicine Hat, 63 miles west of Maple Creek, and 660 miles from Winnipeg, is beautifully situated on the east bank of the South Saskatchewan River, a short distance north of the point where this river receives the waters of its tributary, the Seven Persons River. With a present population of less than half a thousand, it is, nevertheless, a town which seems bound to make rapid progress, for it is the centre not only of an agricultural area but also of what in the near future bids fair to become an important coal mining district. It occupies a great amphitheatre surrounded by low Cretaceous hills, the effect of which rising abruptly from the dead level of the prairie is very marked. Medicine Hat is at a height of 2,100 feet above the level of the sea, and the magnificent river which adds so much to the natural beauty of the locality has here carved out for itself a channel, the banks of which rise nearly 300 feet above the water.

And now, west of Medicine Hat and as far as Calgary, a distance of 179 miles, the route lies through the last stretch of genuine prairie land—prairie land, too, of the most typical character, one sky-bound grassy plain, unbroken either by tree or shrub. Black-feet, Crees, and parties of other tribes of Indians are here met with. Beyond Medicine Hat a broad table-land extends between the Bow River on the south and the Red Deer River on the North, and at Lungevin, 35 miles west of the banks of the Saskatchewan, a recent boring for coal resulted in the tapping of a highly combustible gas, which was ignited as it issued from the earth, and the heat evolved was, in September last, being utilized for driving the machinery employed in the boring.

tial houses, and wide, open streets, the town cannot fail to impress favourably anyone who may visit it, and it is likely to undergo rapid development. And yet, less than three years ago there was nothing to mark the site of this rapidly rising city save a few canvas tents, and the silence and solitude of the Great Plains of Regina had never been disturbed by the shriek of the locomotive.

Journeying along westward, some choice farming land is entered upon after leaving Regina, and here the traveller commences the ascent of the second prairie escarpment, the Missouri Coteau, marked by gently undulating land. At Moose Jaw, 42 miles beyond Regina, and 398 miles from Winnipeg, a very popular town is reached at the confluence of the Moose Jaw and Thunder Creeks, tributaries of the Qu'Appelle River. The town is neat and trim, its streets and avenues are well planned, many of its buildings are handsome and substantial, and the growth of its population has been remarkably rapid even for a prairie town. Fifteen miles to the north is Buffalo Lake, formed by the expansion of the Big Arm River on its way to join the Qu'Appelle; the banks of this lake are about 300 feet high. From the town of Moose Jaw an Indian trail leads northwards to the Temperance Colony, about 160 miles distant, where the settlers occupy a rolling prairie, well watered and fertile. Saskatoon, the capital of the colony, is on a wooded bluff, overlooking the broad Saskatchewan River.

Beyond Moose Jaw the railway track follows Thunder Creek, and continues to ascend the slope of the Grand Coteau of the Missouri. There are good pastures in this district, and the land looks well adapted for sheep grazing. Twenty miles west of Moose Jaw the line passes the southern shore of the long, narrow Pelican Lake, which abounds in duck, geese, and pelican. The summit of the Missouri Coteau is reached at a point 45 miles west of Moose Jaw, and 443 miles from Winnipeg. At this point, called Secretan, the third prairie steppe is reached, and Secretan is further of interest in that the most easterly of the 10 experimental farms of the Canadian Pacific Railway is situated here. The most westerly of the ten farms is at Gleichen, 351 miles beyond Secretan, and the history of this and other farms will be found detailed later on. The railway track through the Coteau passes over some thirty miles of rolling or broken country, consisting of successive ridges and mounds, diversified with swales and alkaline ponds. To the south are the Old Wives' Lakes, with Chaplin Station, nine miles west of Secretan, at their northern end. The lakes, fifty miles long, and six to ten miles broad, swarm with wild duck. Going on westward the train passes Rush Lake, and arrives at Swift Current, 511 miles from Winnipeg. This small town is not far from the South Saskatchewan River, as it bends southward on its way to join the main stream. Forty-four miles further on is Cypress Station, lying to the north of the Cypress Hills. Around this spot is a considerable tract of bare, and apparently barren land, but as there appears to be plenty of useful clay resting on sandy subsoils, it is very likely that good agricultural soils may here be worked up, and the success of the experimental farms at Swift Current and Gull Lake gives support to this idea.

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Medicine Hat, 63 miles west of Maple Creek and 660 miles from Winnipeg, is beautifully situated on the east bank of the South Saskatchewan River, a short distance north of the point where this river receives the waters of its tributary, the Seven Persons River. With a present population of less than half a thousand, it is nevertheless a town which seems bound to make rapid progress, for it is the centre not only of an agricultural area but also of what in the near future bids fair to become an important coal mining district. It occupies a great amphitheatre surrounded by low Cretaceous hills, the effect of which rising abruptly from the dead level of the prairie is very marked. Medicine Hat is at a height of 2,100 feet above the level of the sea, and the magnificent river which adds

so much to the natural beauty of the locality has here carved out for itself a channel, the banks of which rise nearly 300 feet above the water level. Immediately on leaving Medicine Hat for the west the train passes over a very fine iron railway bridge, which here at a great height above the water spans the gorge of the South Saskatchewan. Away to the north-east of Medicine Hat this river is joined by the Red Deer River, while much farther in the same direction, on the banks of the Northern Saskatchewan, is the town of Battleford, between which and Medicine Hat communication is kept up along the Indian trail. Battleford is the centre of a picturesque region occupied by many thriving settlements.

And north-west of Medicine Hat and as far as Calgary, a distance of 179 miles, the route lies through the last stretch of genuine prairie land—prairie land, too, of the most typical character, one sky-bound grassy plain, unbroken either by tree or shrub. Blackfeet, Crees, and parties of other tribes of Indians are here met with. Beyond Medicine Hat a broad table-land extends between the Bow River on the south and the Red Deer River on the north, and at Langevin, 35 miles west of the banks of the Saskatchewan a recent boring for coal resulted in the tapping of a highly combustible gas which was ignited as it issued from the earth, and the heat evolved was, in September last, being utilized for driving the steam machinery employed in the boring. Crowfoot Crossing, 106 miles from Medicine Hat, takes its name from a well-known Indian chief; a few farms are established here, and there is also a large Indian reserve. Nineteen miles further on is Gleichen, in the midst of a promising agricultural district, and almost on the direct north and south line between the important centres of Fort Macleod and Edmonton, the former lying amongst the foot-hills southward on the banks of the Old Man River before it flows into the Belly river, a tributary of the South Saskatchewan, and Edmonton being far away to the north on the banks of the North Saskatchewan. Here, on a clear day, the lofty, snow-clad peaks of the Rocky Mountains, more than a hundred miles distant, may be seen glistening against the western sky. Beyond Gleichen is a fine expanse of unoccupied grazing land which, till recently, was the home of buffalo and antelope. Passing Cheadle, which is named in honour of the intrepid traveller who made the "north-west passage by land," the western boundary of the third prairie steppe is attained near the banks of the beautiful Bow River, penetrating the outer valley of which the traveller pushes on to Calgary, the most westerly of the genuine prairie towns met with along the track of the Canadian Pacific Railway.

Calgary, 179 miles from Medicine Hat, 839 miles west of Winnipeg, 1,268 miles from Port Arthur, Lake Superior, and 2,280 miles west of Montreal, is more than 3,000 feet above the level of the sea. A small town as yet, it nevertheless possesses capacities for great and rapid development; the centre of a broad and fertile agricultural district, the head quarters of the large cattle ranches to the south, the future commercial centre for the mining enterprise which will ere long develop the country to the westward, and, above all, the natural beauty of its situation, these are some of the factors which will help to insure a great future for the town of Calgary. Eastward is the prairie, and the town itself is on the prairie; but to the north, to the south, and to the west, the foot hills of the Rocky Mountains break the monotony of the scene, and are themselves thrown into relief by the loftier summits in the back-ground, and these in turn present a wonderful contrast with the white peaks which tower above and behind them in awful grandeur.

Through the plain of Calgary flow the clear waters of the Bow River, which a short distance from the town is joined by its tributary, the Elbow. The excellence of the land in this district is testified by the number of flourishing farms on Pine Creek, on Fish Creek, and on the banks of the Elbow River, and the plentiful supply of good water, the abundance of fuel, and the kindly climate must continue to make this an attractive region to settlers. A journey northward by stage, occupying five days, is necessary to reach Edmonton, the head quarters of the Saskatchewan trade of the Hudson's Bay Company.

West of Calgary the prairie continually narrows as it follows the course of the Bow River over which the railway is carried no less than four times.

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THE SCENERY OF THE NORTH-WEST.

It would be a hopeless task to attempt to convey any adequate idea of the scenery of the Rocky Mountains. In approaching this superb range from the east the traveller experiences a succession of surprises, each one more novel than its predecessor. All the splendid and magnificent effects which Nature can produce when she works with such materials as massive rocks and yawning chasms, lakes and streams and waterfalls, dense belts of dark green forest trees, dazzling snow fields, and lofty ice-clad mountain peaks glistening in the blue vault of heaven, are here combined to form a glorious panorama which must linger in the memory of him who sees it forever. Dwellers on the prairie need never be more than a day or two's journey from regions where Nature may be seen in her grandest and wildest moods. To the south, and more particularly to the north of the railway belt, scenery widely different from that of the prairie may be enjoyed; mind and body may alike be refreshed in the wild recesses of the Rockies, the Alps of the North-West; and the country east of Winnipeg, between Lake Superior and the Red River Valley, presents another complete change of scenery from that of the prairie. At Rat Portage, for example, 132 miles east of Winnipeg, the lovely Lake of the Woods is bound ere long to become a great place of resort in the summer season; not only are its surroundings in the highest degree picturesque, but the surface of the lake itself is dotted with innumerable islands of every variety of shape and size. These islands, tree-clad or grass covered to the water's edge, are like

"Summer isles of Eden lying in the dark purple spheres of sea."

and upon them, and in the waters around them, the tired worker will find rest and enjoyment. More to the east, about the shores of Lake Superior, are many of the scenes of Hiawatha.

CLIMATE OF THE PRAIRIE.

Nothing in connection with the North-West is, perhaps, more misapprehended at home than the nature of its climate. Old notions, and particularly erroneous ones, die hard, and the idea, that up to fifteen or twenty years ago was still current in England, that North-West Canada was a cold, desolate, inhospitable region, with its soil frost-bound nearly the year round, and fitted only to be the home of fur-bearing animals, still lingers in the minds of many people. That in the North-West the thermometer as a rule gives higher readings in the summer and lower in the winter than we are accustomed to in the old country is perfectly true, but in estimating the character of a climate it is wrong and misleading to be guided by the thermometer alone. The atmosphere possesses other properties besides temperature; it can tell a tale to other meteorological instruments besides the thermometer. The hygrometer, an instrument for indicating the amount of moisture in the air, should be observed in conjunction with the thermometer, or the same information may be gained by comparing the readings of a wet bulb and a dry bulb thermometer. It is thereby ascertained that the air of Manitoba and the North-West is usually drier than that of the British Isles, and to comprehend the significance of this fact it is necessary to bear in mind the well-known physical law that water is a better conductor of heat than dry air. The presence in the atmosphere of moisture—and atmospheric moisture is merely water vapour, often containing minute particles of water—renders the air a better conductor of heat the higher the percentage of moisture. Hence, in cold weather, moist or damp air will conduct away heat from the animal body more rapidly than drier air, and thus arises the pronounced feeling of discomfort which in the British Isles is often associated with cold, damp weather, and probably much more frequently experienced in Britain than in North-West Canada. Dry air is a bad conductor of heat, so that, even with a very low temperature, such air really plays the part of an insulator in preventing the escape of warmth from the body. Let it, however, become saturated with moisture, and it would at once, by conducting the heat away from the skin, produce a sensation of cold and discomfort. On physical grounds, then, it is easy to understand how the dwellers in the North-West can endure a winter temperature which in our own climate would be intolerable—the dryness of the atmosphere is their protection. To explain why the atmosphere is so much drier there would involve too great a divergence into physiographical details.

Moreover, the frost which locks up the land for months in the winter is really a serviceable friend to the prairie farmer. The moisture which permeates the soil

expands in the act of freezing, and this causes a minute separation or disruption amongst the particles of ploughed earth, so that when the thaw comes they fall apart in a desirable state of tilth, which it is well nigh impossible to bring about by the work of any agricultural implement. Frost is a good servant to farmers, and one that works without pay. At home a winter without frost is regarded by farmers of arable land, particularly of heavy clay soils, as a misfortune; they know well that it means much extra work on their fallow lands for both men and horses, and that with all their pains they cannot produce so effective a result as frost is capable of bringing about.

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THE PRAIRIE AS A HOME FOR SETTLERS.

What advantages or inducements does the North-West offer to settlers? Part of the answer to this question must be sought in the foregoing pages, but I will enumerate here some of what I consider to be the chief attractions. Grants of land within convenient distance of the railway may be obtained either free from the Government, or at very cheap rates from the Canadian Pacific Railway. These may be selected from the richest prairie land at the choice of the settler. No clearance of timber is required, there is no severe labor with the axe, nor any patient waiting for years in order that tree stumps may rot to facilitate their removal. The prairie sod can be laid under a plough for the first time and a crop harvested all within the space of the first twelve months. The country is well watered, for, from what has already been said, it is evident that rivers and lakes and creeks abound, and where running water is not conveniently near, good water can be got within moderate distance of the surface. The prairie is healthy to dwell upon, the climate is more genial than is generally supposed, and settlers who go out in robust health will find the country is not only tolerable, but enjoyable to live in. Weak or delicate people should not go there, for they might find the air too bracing. Idlers and loafers should not go there, because the prairie is in the need of thrifty workers. Men who want to acquire wealth without working for it should not go there, because they will be disappointed. Thomas Carlyle once wrote, "Two men I honour, and no third-first, the toil-worn craftsman that with earth-made implement laboriously conquers the earth and makes her man's." Men of this type will find on the prairie a wide field for conquest, and I believe they may feel more certain of a reward, and of a speedy reward, than in nine cases out of ten they could hope for in the old country.

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The nutritive value of the prairie herbage is sufficiently proved by the fact of its having sustained the vast herds of buffalo which for ages have made the prairie their home, but which are now disappearing before the advance of civilisation. Nevertheless, the introduction of cultivated grasses would in all probability be a step in the right direction, and the attempt would most likely be justified by the success which would follow it. Although much of the land appears capable of growing wheat for an indefinite period, yet those settlers whose means would allow of it would I think do well to sow a portion of their land with good English grass seeds after the third or fourth year. Such grasses as cocksfoot, foin, meadow fescue and timothy, together with white and purple clover and a little black medick suggest themselves as desirable, but every effort should be made to secure clean seed. It is an interesting fact that there are no true clovers native to the prairie, although many species of the milk-vetch, *Astragalus*, are met with.

The more mixed farming extends on the prairies the more interesting will the settlers find it, and the less dependent will they be upon the prices they will from year to year secure for their wheat. The establishment of flour mills in the North-West will lessen the cost of flour and oatmeal, while the facilities afforded by the railway must continue to enable them to compete on favourable terms with the other wheat-exporting countries of the world. Artificial feeding stuffs, like artificial fertilisers, belong to a future period.

There is no scarcity of timber or fuel, for vast forests are at different spots touched by the railway. Moreover, it is absolutely certain that extensive coal-bearing regions

exist in many easily accessible points of the North-West, some of the coal, as in the Saskatchewan valley near Medicine Hat, being obtainable by open workings, the coal cropping out at the surface. Not only will the North-West continue capable of meeting its own demands for mineral fuel, but in a short time it will probably be in a position to export coal.

Though the prairie is destitute of trees it is not destined to remain so. Every settler should plant belts of poplar and other trees about his homestead. They will break the force of the wind, afford grateful shelter to live stock, and do much towards relieving the monotony of the plain. The work might be progressive, a few trees being planted each year, but it is a detail that should not be neglected. In the rolling country beyond Calgary, and in the foothills of the Rockies, where pastoral farming will probably constitute the main industry, much ground shelter is available for live stock.

As to the prospects of the Great North-West, it is only the poet who can say :

"For I dipt into the future, far as human eye could see,
Saw the Vision of the world, and all the wonder that would be ;"

but if its development in the near future may be at all gauged by its progress in the immediate past, then will its growth be rapid indeed. Men who go out there determined to work will, as the years roll on, find themselves in a much better position than they can hope to secure in the old country, and when the time comes for them to enjoy a well-earned rest in their declining years they will find that they have got the means to enable them to do so. And the children who are born and bred in the happy prairie homes, who will see around them on every side the triumphs of man's industry, who are reared in the bracing atmosphere of a northern sky, they cannot fail to be healthy and vigorous.

"Iron-jointed, supple-sinew'd, they shall dive, and they shall run,"

and, true "prairie flowers," they will grow into men and women possessed of a physique which could never have been acquired under the sunnier, more southern, and more enervating climes whither so many efforts are made to attract British settlers,—scions of the nation which has conquered and colonised a larger portion of the earth's surface than all other nations taken together.

NOTES ON

THE CANADIAN NORTH-WEST.

EXTRACTED FROM A REPORT BY J. P. SHELDON, PROFESSOR OF AGRICULTURE, AT THE WILTS AND HANTS AGRICULTURAL COLLEGE, DOWNTON, SALISBURY, ENGLAND, IN 1884.

The Province of Manitoba—so well known by repute in Europe—is just now emerging from depression caused by inflated speculation in real property. This was a bubble which, by opening up the vast territory to the west, the Canadian Pacific Railway was sure to burst. Land has now come down to its legitimate and intrinsic value, or has even sunk below that level for the time being. Confidence, however, which never ought to have been lost to the extent it was a year ago, is now being restored, and enterprise will proceed at a regular rate, so that now is the time for emigrants to go out. The province, which has been greatly enlarged of late, has now an area of 123,200 square miles. It is one of five sister provinces in the North-West, the others being : Assiniboia, containing 95,000 square miles ; Alberta, containing 100,000

square miles; Saskatchewan, containing 114,000 square miles; and Athabaska, containing 122,000 square miles. Manitoba has therefore an acreage of 473,088,000, of which a considerable portion is water. In many parts of the province the soil is of surpassing richness, producing excellent crops of wheat, barley, oats, turnips, potatoes, carrots, onions, etc., etc., the wheat particularly being of very superior quality, hard and dry, and much sought after by American millers for grading up the softer wheats of southern districts. An important natural principle in respect of the North-West must be borne in mind, viz., that wheat grows in a manner most nearly approaching perfection, so far as milling properties are concerned, AT THE NORTHERN LIMIT OF ITS SUCCESSFUL GROWTH. This matter stamps for ever the North-West Territory as perhaps the best wheat-growing region in the world—better by far than any which the United States possess, for Alaska is outside the limit of successful wheat production. Fall ploughing for wheat is done as extensively as time permits, and it must be remembered that the severe winters of Canada do a great deal of the farmer's work for him, in the way of pulverising and mellowing the soil, so that harrowing in the seed is a simple operation, quickly performed, on fall-ploughed land.

A great deal of swampy land, which is excellent for crops when drained, occurs here and there in Manitoba; elsewhere there are lighter soils, some of which are unsuitable for agriculture; and there are patches of alkaline land which, until a few ploughed crops have been taken, are more or less detrimental to the growth of grain and grass. Timber and water are very unevenly distributed, and generally occur in company with each other. Water, however, can usually be obtained anywhere by boring for it, and windmill pumps ought to be of great service to the Manitoban farmers. Water is sometimes conserved for stock by throwing a weir across a slough, and basin-like hollows, or "meers," scooped out in the prairie clay, are found to answer fairly well as reservoirs. It is tolerably certain that properly constructed meers, as we have them on the Derbyshire hills, lined with concrete first, then with four inches thick of well tempered clay firmly beaten together, and lastly, with well packed stones for protection, would answer well in Canada.

Trees, indeed, are found on the prairies, but chiefly on the banks of the rivers and in the swampy lands, and it is to the recurrent prairie fires that the scarcity of timber on the great plains may be attributed. Wherever the fires have found a natural check, as by the rivers and swamps, we find trees for the most part; and chiefly on the eastern banks of the rivers which, by affording a boundary, have continued to check the fires that are driven onward by the prevailing west winds. At various places along the road through the North-West, at the Bell Farm, at Portage la Prairie, and elsewhere, trees which have been planted are growing apace. The practice of planting trees on the prairies should be encouraged by Government subsidies or rewards, for, apart from the questions of an increased rainfall, of fuel and of shelter, nothing can possibly adorn those great plains like trees. Trees, indeed, are the greatest natural ornament any country can possess, not excepting even water and mountains, and they would tend to embellish the life of a man on the prairies.

The grain-growing capacity of the soil is the leading criterion of its value, probably, in Manitoba and the North-West generally, and most likely will continue so for some time to come, because that region will become the chief granary of the American continent and remain so; but it is none the less true that its ability to produce excellent roots and green crops is a factor which will be utilised extensively in years to come. A purely grain-raising region is an agricultural anomaly which cannot last, and it is a fact of great potential value to this vast territory that its soil will produce all the crops which contribute to the plenary welfare of both men and animals. Cattle, horses, pigs and poultry are inseparable from the comfort of man in all agricultural communities, and the same may also be predicated of sheep; but all of these demand arrangements and provisions more or less intricate, in the form of shelter and food, provisions which can in a great measure be dispensed with while the land is devoted to grain-raising only. The process of populating the North-West with domesticated animals will be contemporary with the provision of shelter, water, and suitable food; and though the process may be a slow one, it will be perfected in time. In the foothills of the Rocky Mountains it will be much more rapid, for there exists in that region a rich natural herbage, a good supply of water for the most part, and abundance of "land shelter" among the hills and dales.

We passed along through the Provinces of Assiniboia, containing 95,000 square miles, and Alberta, containing 100,000 square miles, at least fifty per cent. of which is said to be good land available for agriculture. We saw several of the experimental farms which have been established by the C. P. R. Co., and found various cereals, roots and garden vegetables growing successfully on the new prairie soil. The soil varies from a dark-coloured clay to strong loams, and light sands, and affords scope for all kinds of agricultural fancy. But the handsomest country we saw was from Calgary up the slopes of the Rockies. This is the great ranching country, and we saw many cattle roaming about the pastures which adorn this undulating district—a district which stretches a long distance to the north and south of the railway. It must be admitted that the advantages which this country affords for cattle-raising are very extensive and important; for, as the isothermal line runs in a north-westerly direction along the prairies, the climate at the Rockies is habitable and even genial in a degree of latitude which is desolate on the Atlantic side of Canada. At a point five thousand feet above the sea level, in the Rocky Mountains, we found the air so mild that no overcoats were wanted, even at five o'clock in the morning, although we had come up the mountains in a snow-storm the previous evening. Above this point, which is the highest the railway attains in the Kicking Horse Pass, the unnumbered snow-clad peaks of the mountains shoot up into the clear air ten or twelve thousand feet above us, forming a spectacle grand, sublime, magnificent, and well repaying a thousand miles' journey over the prairies! The splendid pine trees with which the mountains are adorned creep up the peaks until they are stopped by the glaciers and the eternal snow, and there is abundant interest for the lovers of botany and geology. One magnificent day spent among the crags and ravines of British Columbia, brought us to the beginning of the return journey, many of us carrying away specimens of rocks, ferns and other flora, including even the wild gooseberry, which we found flourishing not far below the snow level.

The eastern slopes and foothills of the Rockies and the adjacent prairies are destined soon to resound, as indeed they already do in part, to the lowings of herds and the bleatings of flocks, and they will become one of the most important cattle-raising districts on the American continent. But ranching has various disadvantages in its present condition, and cannot well prosper save under the personal supervision of an owner or owners. Hired men are apt to render only such an amount of work and care as they deem themselves amply paid for, and absentee ownership is not calculated, as things are, to meet with much success. A fruitful source of loss occurs in calves when branding time comes round, many of them passing then into the ownership which happens to be most vigilant; for, until they are branded, who can say to whom they belong, where cattle roam in common over millions of acres? Cattle that are out of condition when winter comes on are apt to perish in the cold, unless they are carefully fed and sheltered, and the Cochrane Ranching Company suffered severely one winter in this manner, with cattle that were out of condition after being driven northward from Montana, too late in the autumn. I am assured, however, that cattle in good condition to start with will stand the winter bravely, keeping on their flesh till long after Christmas. Grass, water, forage for hard winters, and shelter both natural and artificial, are indispensable to the continued success of a ranche. The winters vary in severity, so that the amount of provision to be made for stock, in the way of food and shelter, is always problematical; but the safe thing is to provide enough for any probable or possible contingency of weather, for an early winter and a late spring. It will thus be seen how necessary it is that an owner should be in residence at a ranche.

I am assured on good authority that fine crops of roots and oats can be grown with very crude cultivation, and that, even here the land in its natural state appears barren, maize and cereals prosper amazingly. The ranchers depend a great deal on the hay which is self-curing, that is, on grass curing as it stands, to be consumed *in situ*; and it is a peculiarity of the native grass that it should cure in this way, providing frosts do not cut it down before it has had time to do so. Generally speaking, the cattle subsist very well through the winter on this self-cured hay, for the winds as a rule blow it bare of the dry snow; but when it happens to be deeply buried in snow, and remains so until the snow is frozen so as to resist the wind, then the cattle are in danger of perishing for want of food; and here it is that a supply of forage is so necessary and beneficial. Dairy farming, in connection more or less direct with ranching, will probably open out in Alberta, where, it is asserted, and I think not unfairly so, that the country possesses

all the natural conditions essential to that business. A young English rancher of two years' standing, informed me that he contemplated forming a herd of dairy cows to let out to a dairyman on the "half-sales" system. This, however, necessitates the fencing out of land and a provision of buildings and forage, and so can hardly become general for a long time to come. It is an item of some significance, however, that such an idea should already be entertained in the neighbourhood of the Rockies, and it serves to illustrate the speed at which things are moving in that region since the advent of the railway.

The North-West has very large deposits of coal, it is known, in places, and there is reason to suppose that there are many others awaiting discovery. In some of the banks of the rivers coal is seen protruding in seams many feet thick, and we brought with us specimens of apparently excellent coal, which was quarried in the Medicine Hat district. At Langevin, 30 miles west of Medicine Hat, and 695 miles west of Winnipeg, we saw a gas well, which was then driving a twelve horse-power engine; the gas had been struck at 800 feet deep, while boring for water, and is now being used to bore another well for water. It is indeed impossible to say what may not be in store in this land of wonders.

My impression is that the North-West of Canada presents an opening for pushing young men of good conduct, healthy, sober, thrifty and industrious. An extensive knowledge of British agricultural practices is not necessary to a farmer in the North-West, where farming is of the simplest imaginable character where ploughs are used at all. Capital is most useful in Canadian agriculture, and finds a better reward than in England, when it is in the hands of men who know how to use it. But even men of capital, and of experience in British farming, will be well advised not to embark at once in farming on their own account, but rather to hire themselves out to farmers already established, and thus to pick up tuition and cash at the same time. There is an old adage to the effect that "a man must pay for his learning." This, however, is not true in Canada, if men will hire themselves out as I have advised, for there a MAN IS PAID FOR HIS LEARNING, and does not pay for it himself. He should also look around the country north and south, and east and west, before he finally decides where to locate himself. Where land is so splendidly abundant, it is hardly worth his while to take hold of the first block he comes across. A new beginner in the North-West must make up his mind to "rough it" for a time, until he can get his domestic surroundings fixed up properly, to which end the energies of a wife would be well directed. He must also be prepared to work hard, be steady, and be content with sparse society. Loungeurs find no congenial home in that country.

The following is Dr. Cheadle's account of the horses, taken from pp. 167-8 of the sixth edition of the "North-West Passage by Land": "We now prepared to leave our winter quarters. The first thing to do was to find the horses, which had been turned loose at the commencement of winter. We had seen them or their tracks from time to time, and knew in what direction they had wandered. La Ronde followed their trail without difficulty, and discovered them about eight or ten miles away. We were very much astonished at their fine condition when he drove them back to La Belle Prairie. Although very thin when the snow began to fall, they were now perfect balls of fat, and as wild and full of spirit as if fed on corn—a most unusual condition for Indian horses. The pasture is so nutritious that animals fatten rapidly even in winter—when they have to scratch away the snow to feed—if they find woods to shelter them from the piercing winds. No horses are more hardy or enduring than those of this country, yet their only food is the grass of the prairies and the vetches of the copses. The milch cows and draught oxen at Red River and in Minnesota, feeding on grass alone, were generally in nearly as fine condition as the stall-fed cattle of the Baker Street Show." The district between Battle River and the Saskatchewan, lat. 53° and long. 112° and 113°, is marked in Dr. Cheadle's map as possessing "rich soil and fine pasturage."

Many progressive towns are rising up along the line of the Canadian Pacific Railway. Portage la Prairie is an important place, situated in the centre of the richest grain-growing plain of Manitoba, and having grain elevators, flour and paper mills, a biscuit

factory, many hotels, and other well-built edifices, and a population of some 4,000. Brandon, too, 133 miles west of Winnipeg, is a flourishing town, with mayor and corporation, and a population of over 3,000 though only one or four years old. It has a fine situation in the Valley of the Assiniboine, and fine large grain elevators. At these two places we received addresses and the hospitality of the people—at the latter place in the middle of the night, and at the former in the early morning. Virden, Mossburn, Broadview, Indian Head, Qu'Appelle, Regina, Moose Jaw, Medicine Hat and Lethbridge, are also incipient cities, and already important centres of trade.

Winnipeg, however, is the capital of Manitoba and the commercial capital of the North-West. It is the great distributing point for all of the country between the Red River and the Rocky Mountains. In 1870 it was a hamlet, with a population of 250 souls. In 1874 it was incorporated as a city, with an assessment roll of \$2,076,018; in 1882 it could boast of 25,000 inhabitants and an assessment of \$30,432,270, and its population is now about 30,000. It has broad and well laid out streets, lined with handsome stores and warehouses, private residences and public buildings. The city is lighted by electricity and gas, street railways are in operation, a fire brigade has been organized, and all the advantages and conveniences of an old established city are enjoyed by its inhabitants. The offices and plant of the western division of the Canadian Pacific Railway Company are situated in Winnipeg, and a fine station has been built.

THE CANADIAN NORTH-WEST

AND

THE ADVANTAGES IT OFFERS

FOR

EMIGRATION PURPOSES.

BY PROF. HENRY TANNER, M.R.A.C., F.C.S.,

SENIOR EXAMINER ON THE PRINCIPLES OF AGRICULTURE UNDER THE GOVERNMENT
DEPARTMENT OF SCIENCE; DIRECTOR OF EDUCATION UNDER THE INSTITUTE OF
AGRICULTURE, SOUTH KENSINGTON, LONDON.

(Report of 1885 published January 1886.)

Under this title we include the Province of Manitoba, and the North-West Territories. The more complete political organisation of Manitoba, and her more advanced settlement, distinguish her from the general group of rising Provinces in the Canadian North-West. As a first step, it is very desirable to realize something of the magnitude of the country we are about to notice. The Province of Manitoba is rather larger than Great Britain with Ireland added, and to the West of Manitoba four other Provinces have been formed, each being somewhat about the same size. After these lands have thus been cut out of the North-West Territories, we have a tract of country remaining rather larger than the total area of Russia in Europe with the German

Empire added. Hence it will be seen that under the title of the Canadian North-West we are dealing with an enormous tract of country, and a very important portion of the Dominion of Canada. Lord Dufferin, in speaking of this district, said: "From its geographical position, and its peculiar characteristics, Manitoba may be regarded as the keystone of that mighty arch of sister Provinces which spans the continent from the Atlantic to the Pacific. It is here that Canada, emerging from her woods and forests, first gazed upon her rolling prairies, and unexplored North-West, and learnt that her historical territories of the Canadas, though themselves more extensive than half-a-dozen European kingdoms, were but the antechambers to that till then undreamt of Dominion, whose illimitable dimensions alike confound the arithmetic of the surveyor, and the verification of the explorer. It was hence that, counting her past achievements as but the prelude to her future exertions and expanding destinies, she took a new departure, and felt herself no longer a mere settler along the banks of a single river, but the peer of any power on the earth." Four years then elapsed, and at the same point of the Canadian North-West, his successor in the office of Governor-General, the Marquis of Lorne, in an address which he delivered in Winnipeg, in 1881, most warmly supported these views. He said: "Unknown a few years ago, we now see Winnipeg rapidly lifting itself to the front rank amongst the commercial centres of the Continent. We may look in vain elsewhere for a situation so favourable and so commanding—many as are the fair regions of which we can boast. There may be some among you before whose eyes the whole wonderful panorama of our Provinces has passed—the ocean garden island of Prince Edward, the magnificent valleys of St. John and Sussex, the marvellous country, the home of 'Evangeline,' where Blomidon looks down on the tides of Fundy, and over tracts of red soil, richer than the wealth of Kent. You may have seen the fortified Paradise of Quebec; and Montreal, whose prosperity and beauty are worthy of her great St. Lawrence, and you may have admired the well-wrought and splendid Province of Ontario, and rejoiced at the growth of her capital Toronto, and yet nowhere can you find a situation whose natural advantages promise so great a future as that which seems ensured to Manitoba, and to Winnipeg, the Heart City of our Dominion. The measureless meadows which commence here, stretch without interruption of their good soil westward to your boundary. The Province is a green sea over which the summer winds pass in waves of rich grasses and flowers, and on this vast extent it is only as yet here and there that a yellow patch shows some gigantic wheat field. There was not one person who had manfully faced the first difficulties—always far less than those to be encountered in the older provinces—but said that he was getting on well, and he was glad he had come, and he generally added that he believed his bit of the country must be the best, and that he only wished his friends could have the same good fortune, for his expectations were more than realized."

Another period of four years passes by, and in the interval we find the Canadian Pacific Railway completed from the Atlantic to the Pacific. In October, 1885, the Governor-General of Canada (His Excellency the Marquis of Lansdowne), received a right loyal welcome in Winnipeg on his return from a tour extending through the Canadian North-West to British Columbia, and on that occasion he said:—"It is impossible to travel from this city to the Western Ocean without feelings of admiration for the courage, both of those who first conceived, and of those who have carried to a successful consummation, this great national work. The construction of the Canadian Pacific Railway stands alone in history of great achievements in railway building. The physical difficulties which had to be overcome, the shortness of the time in which the work was carried out, the small numerical strength of the nation for whom the work has been done, are without parallel in the history of similar undertakings. * * * There was another thought which forced itself upon my mind during my travels. All this country over which we have been passing, its natural resources, and physical beauties belongs to the Dominion of Canada. * * * It is impossible to look upon this Continent, now sparsely inhabited by a few millions of human beings, without reflecting how small are the interests of the present, compared with those of the future which lies before us. Let us keep our vision fixed upon that future, and let us remember how vast is the load of responsibility involved by the ownership of this great country. If I could venture to give you advice I should say, let the Dominion Government at Ottawa, the Provincial Government in each Province, the municipal authorities in your cities, let every citizen in his own place, let them bear in mind that they are trustees for those who will come after them, for the millions who will one day replace the thousands now

upon the soil, that when they are gone their successors may say of them, that in the early days of the history of their country, those who were in the position to mould its young destinies, used with wisdom and foresight the tremendous opportunities which Providence placed within their reach." These remarks which have fallen from the lips of these successive Governors-General constitute a great and glorious tribute to the unequalled conditions of prosperity existing in the Canadian North-West, and they give clear indications as to the great developments which await it in the early future.

THE PROVINCE OF MANITOBA.

This Province—the eldest sister of the North-West group—may be fairly considered as having been released from the parental care of the Dominion Government, and as having surrounded herself with a thoroughly complete establishment of her own. Whether we direct our attention to the work done in her Parliament, or to the administration of her laws, or to the development of her internal wealth, she stands unsurpassed for their excellence. Amidst so much that is well organised, it is still necessary for me to make special reference to the work done under

THE DEPARTMENT OF AGRICULTURE.

Their work would be highly commendable in any country, if only for the fact that their annual reports are of the highest excellence, and their crop and live stock bulletins are of immense practical value. The care taken in obtaining accurate information is worthy of all praise, and it is a matter for warm congratulation that the example which Manitoba has set is very likely to be followed throughout the Dominion of Canada. The work of the Department as now organised goes far beyond this, for it embraces the oversight of all matters relating to agriculture—such as the establishment and assistance of local boards of agriculture, and local agricultural societies—the management of the Provincial Agricultural Exhibition—the establishment of schools for agriculture and for instruction in veterinary science—the enforcement of laws relating to the diseases of animals, coupled with providing professional assistance in cases of exceptional difficulty—the enforcement of the laws having reference to noxious weeds—the management of experiments on crops, live stock, fruit, forestry, etc., etc. I have noticed the work of this Department somewhat in detail, because I think that it should be more generally known, that these farmers who settle within this Province have a guardian care over them and a strong and willing hand ready to help them in any difficulty. The Government of Manitoba recognises this great truth—that the prosperity of every individual settler is a matter of public importance, because of its influence upon the general welfare of the Province. Men are not left here to become martyrs to circumstances which are beyond their control, neither are they permitted to feel that they are uncared for, whether they succeed or fail. There is a jealous protection extended towards them, because every successful farmer is a producer of wealth, and being such it is considered to be both economical and desirable to encourage all his efforts. I must not, however, be supposed to suggest that any Government care can convert our "never-do-weels" into prosperous men of business, but, notwithstanding this, immense help can be given—and is given—to those men who understand their work, and who have the capital to enter into their business under conditions which are consistent with success.

THE CHARACTER OF THE SOIL.

The character of the soil of any country necessarily exerts a commanding influence upon the commercial success of those who cultivate it, and the natural fertility of the soil consequently becomes a matter of very great importance. This is a truth which is more perfectly known in England and Scotland than in any country in the world, for here the greatest efforts and the heaviest expenditure have been made, in keeping up the fertility of our soils by the aid of artificial manures. The soil of Manitoba differs very greatly in different parts, for we must not forget that we are speaking of a tract of country larger than Great Britain and Ireland. No one need be surprised at the fact that we find in Manitoba soils which are good, bad, and indifferent, and yet experience justifies the Indian title it bears as "The Land of the Great Spirit of God's country," for this is the literal translation of the word "Manitoba." One man may truthfully

describe the soil of his neighbourhood as being most fertile in its character, whilst another man may with equal truth describe some land he has discovered as being of little agricultural value. No one knowing the country can honestly deny these facts, but it does not matter to us as men of business whether or not it is possible to find poor soils in Manitoba. The practical question we have to deal with is this:—Can we find plenty of very good land throughout the Province? I have not the slightest hesitation in saying that land of very high fertility may be most easily obtained there by any man who knows his business, and who can tell the difference between good and inferior soils. I am bound even to go beyond this, and state that although we have hitherto considered the Black Earth of Central Russia (Tchornoi Zem) the richest soil in the world, that land has now to yield its distinguished position to the rich, deep, black soils of Manitoba and the North-West Territory. Here it is that "The Champion Soils of the World" are to be found, and we may rejoice that they are located within the British Empire. Take as an illustration of their powers of fertility the simple fact that on the Kildonan Farm near Winnipeg, belonging to Mr. Robert McBeth, on which land I saw their 50th crop of wheat growing in 1884—crops which had followed each other year after year, and had maintained their full yield from first to last—without the soil losing any portion of its productive power. Year by year had the winter frost renovated that soil with fresh stores of fertility, from its rich reserves, and thus the land became better prepared than ever for its work. It may appear to a stranger to this country a bold statement to make, but with full knowledge of the responsibility which attaches to it, I do not hesitate to say that there are millions of acres in the Canadian North-West, not only fully equal to the Kildonan soil in fertility, but that these lands are still remaining as uncared-for wastes only requiring the plough to prepare them for the reception of the seed. If we descend in the scale of fertility and take those soils which are fully equal to the richest soils in Great Britain and Ireland, even when these possessed their most luxuriant powers, soils of this character and quality exist in still larger quantities. Manitoba possesses her full share of such lands, but these rich soils overspread her boundaries, and are well distributed throughout her sister provinces, and thence they extend onwards and onwards through much of the outer territories. The opportunities therefore which exist for capital and labour being profitably employed in the production of food, sufficient for millions of British subjects, and for supplying them with happy homes surrounded by every comfort, these opportunities, I say, are simply boundless.

*"There a man is a man if he's willing to toil,
And the humblest may gather the fruit of the soil.
There children are blessings, and he who hath most
Has aid for his fortune, and riches to boast.
There the young may exult, and the aged may rest,
Away, far away, in The Land of the West."*

AGRICULTURAL CAPABILITIES.

These results will take us beyond the enquiry as to the quality of the soil, and will bring us into contact with the surrounding circumstances which enable us to make use of a good soil in a more or less successful manner. Here we have to deal with two very clearly defined seasons—the summer or the period of growth, and the winter, or the period of rest. At the present stage our enquiry will be limited to the former of these, for this demands our consideration by reason of its special influence upon our crops and live stock. Every farmer knows that if he is to obtain an abundant crop he must not only secure a fertile soil, but be favoured by a good season and a suitable climate. Happily for the Canadian North-West good seasons are the rule, and bad seasons are extremely exceptional. The conditions of climate are definite and settled, for the frost and snow having left the surface, the land is soon ready for tillage, the seed is sown, and the rapidity and luxuriance of growth is simply incredible to those who are accustomed only to the growth of crops under the British climate. This variation will be easily understood if we remember the clear, bright sunshine, and the steady stimulating warmth which distinguish the climate of the Canadian North-West. The rapidity of growth we observe may be traced to the fact that there is an abundance of plant food in the soil, and that the stimulating influence of warmth and sunshine impart to the plant a great energy of growth, whereby that food is rapidly made use of. In these cases such rapidity of growth is free from the objections which too often accompany it in Great Britain, for the simple reason that the plant-food in the soil in Manitoba and in her

sister provinces is not only abundant in quantity, but it is also perfect in its composition. If these facts are remembered they will go far to show to any intelligent individual, that in the Canadian North-West we are dealing with conditions which to the British farmer are most unusual, if not practically unknown. To illustrate this most important set of conditions, let us suppose that a manufacturer has a very good machine, which, being abundantly supplied with all the materials which are needed, the use of steam power enables a rapid production to be secured without any sacrifice of quality. All of these three conditions, however, are necessary for success, for a weak point in either would soon make itself evident. So also in the growth of crops in that district, the clear, bright sunshine, and the warmth, act as the motive power. The perfect character of the sunlight makes growth exceptionally rapid, and as the supplies of food in the soil are also complete, the excellence of the crop is practically regulated by the ability of the seed for the discharge of its duties. If this vegetable machine be not thoroughly effective, the abundance of motive power, and an unlimited supply of raw materials, are not sufficient for securing a success. In no part of the world have well trained farm seeds equal opportunities for giving their best results. We shall subsequently refer more fully to the important influences exerted by the seed; but when these are equal to their duties the trio is again complete, and very magnificent results are within command. Bearing all these facts in mind, I trust that the reader will not be disposed to condemn an accurate statement of facts as being too highly coloured, or as exaggerations. In any case my duty is clear, and the risk must be run, for I cannot follow the example of a settler in the North-West, who, having explained to me how surprised and delighted he was with the happy circumstances surrounding his new home, I naturally expressed to him the hope that he had written home and told his friends all about it; but he gave us this significant reply:—"Why, Sir, if I only told them one-half they would never believe me again." I have gone out of my way, therefore, to preface some of the details of my report by showing that the conditions of the district are perfectly exceptional, and for this reason no one should feel surprised if the results obtained are exceptional also.

MANITOBA WHEAT.

This is a most valuable wheat for milling. It recommends itself from a miller's or baker's point of view in all points, a type of the perfect. More desirable wheat than samples of Hard Fyfe Canadian for the British miller could not be found. It is simply magnificent. There can be no better quality of wheat used for mixing purposes, both for strength and quality of flour produced—superior even to No. 1 Minnesota wheat. It would prove invaluable to millers in this country where home-grown wheats frequently come to hand in damp condition in consequence of the humidity of the climate. It possesses splendid quality and value for mixing with English wheats; but can we get a regular supply of it? I am afraid the American millers are too 'cute to allow this quality to come here in any quantity, if they can possibly prevent it. If such wheat can be put on our markets at a reasonable price it must meet a ready demand at 3 or 4 shillings per quarter over the best Indian Red wheats. No doubt it would do for mixing in some districts, but I would most certainly grind it alone, and it would make flour of the finest quality. Could we get such quality regularly we should have no fear of any American competition in the point of quality of flour. It is just what we want, and what we cannot buy. The value and quality of Manitoba wheat lies in the fact that it is grown on almost virgin soil. Makers of best flour are, or should be, anxious as far as they can to get their supplies of wheat that they depend on for strength, from those parts of the North-West of America where wheat is a new crop to the land. No. 1 Duluth is not in any way fit to compare with the best Manitoba wheat, especially not in its working qualities. It is certainly as beautiful wheat as ever I saw, and particularly well adapted for millers in this country. Surely some agency can be devised for getting more easy access to these hard wheats which are never seen in commerce in purity. If the English miller could only get a good supply of such wheat at a moderate price fine Hungarian flour would stand little chance in this country.

I may now state that although I most fully agree with this very high commendation of Manitoba wheat, I have in this statement literally quoted the published opinions of 14 of our largest firms of millers in this country, and I have simply grouped these opinions together—such opinions coming from men of extended experience, and they too buyers

who cannot even be suspected of giving any over-commendation—these opinions are of far more value than anything which can be said by those who are not in the trade. If those statements mean anything they prove that the wheat of the Canadian North-West has a special value upon the British markets, and that larger importations are eagerly desired. The fact of Manitoba wheat being thus sought after by millers cannot fail to encourage its production, and this demand will help to maintain its market value. The increased production of wheat will be materially assisted as the means of transport to the British markets are improved, and as the costs are decreased. It is, however, most important that the farmers of the Canadian North-West should have increased facilities for selling direct in the British markets, because it will give them a free choice between the local buyers and an export of their wheat, thereby securing a fair competition. I am glad to be officially informed that such arrangements are daily becoming more within general command.

The increase in the number of flour mills in Manitoba is very marked, for whilst the cost of grinding profitably economises the cost of export, much valuable food is also taken back to the farm, and given to stock, which would otherwise have been sent away in the unground wheat. Each year also shows increasing accommodation alongside the railways in the form of elevators for storing wheat. At the end of 1884 these gave accommodation in Manitoba alone for one and a half million bushels. And in addition to this there was storage at Port Arthur for another half a million. As these elevators give a cheap and good storage for wheat whilst it is being held over for sale, the convenience to farmers is very great. Closely associated with the value of the Manitoba wheat is the question of its cost in production. I see no reason to modify the cost I have already given for each acre under wheat, as a first crop after breaking the prairie, viz.: £2 (or say 10 dollars). As regards the cost for the cultivation of subsequent crops, as there will be tillages on the summer fallow to provide for, it is fair to calculate upon somewhat similar expenditure. The cost per bushel will of course vary with the yield of the crop, but it is no uncommon thing to find 40 bushels produced at just the same cost by a good farmer, as twenty bushels are obtained by one who is "too late" in all his operations. I am not disposed to quote a very low cost for production, but it may be safely calculated as averaging about 20 pence per bushel, and in ordinary seasons it will leave a margin of profit ranging from £2 an acre downwards, according to the character of the management and various local conditions. The expenses incurred in the delivery of wheat to the railway station vary considerably, as will be evident if it be considered that some has to be drawn three miles and other wheat will require perhaps thirty miles carriage. This represents so much additional cost per bushel, and so much less profit to the grower, which he would do well to take into his calculations in selecting his land.

During the last three years (1883-4-5) the growth of wheat has been interfered with by summer frosts. I am perfectly satisfied that any injury which has arisen has been improperly magnified by two classes—namely—those who have opposing interests, and those who want to lower the market price of wheat. These reports are also remarkable for the fact that, generally speaking, whilst they refer to any damage done in the Canadian North-West in very exaggerated terms, they are remarkably silent about other districts in the States which may have suffered far more severely. Having visited the Canadian North-West during each of these three harvests, I have had very fair opportunities for learning the opinions of farmers in various parts of the district, and for personally inspecting the crops. Putting aside all exaggeration we must face the fact that much damage has undoubtedly arisen, and it is in the highest degree important for us to determine how far we can lessen or prevent these losses. I have not the least doubt on my mind but that the danger may be very greatly decreased by a better system of management, and I base that opinion upon facts which have come under my observation in this district. It may, however, be desirable to state at this point, that if the growth of the wheat crop has been unduly delayed by any cause, and frost (not necessarily severe frost) strikes the ear when in a milky state, considerable damage arises, but the liability to injury decreases just as the grain becomes firmer and more solid. The testimony of many of the oldest residents, and notably that of the Hudson's Bay officers, tends directly to show that these frosts are perfectly exceptional. This is satisfactory so far as it goes, but it is still very desirable to enquire fully into the facts of the case. Personally, I am satisfied that by such an enquiry we shall scatter our

fears, and correct those errors on the part of many growers of wheat, which have so largely contributed to any loss which has arisen. In fact it very largely rests with each farmer to determine whether he will make himself safe or run the risk of a loss. A more perfect cultivation of the wheat crop may be regarded as the first and best protection against frost, or any other injury. By this I mean that the soil should be brought into a thoroughly friable condition—that a healthy, hardy, and quick growing seed of good and suitable quality should be sown—that early sowing and thicker sowing should be the rule—that the lands chosen for wheat should be free from the watery vapour arising from lakes and ponds—and that reasonable protection from strong winds should be provided. Each and all of these conditions are obviously desirable as a means for securing the most successful cultivation of wheat, and they constitute a chain of which it may be said, the weakest link indicates its strength. Whether there are frosts or not, these are the requirements for success. If they are adopted the farmer may be assured that he has done his part, and so far as he is personally concerned we shall hear no more of injury from the frost. But when a farmer has been content to sow his seed wheat upon a roughly ploughed turf which is as tough as a rope, or when he has even ploughed that turf over a second time, and left the soil beneath too hard for the roots of the wheat plant to enter, can it be any cause of wonder if that wheat crop makes a slow growth, and that it remains green and full of sap when it ought to have been cut, and ready for going into the stack. If, again, some farmers will continue sowing the seed wheat which year after year they have thus brought into a slower and still slower habit of growth, can it cause surprise that the crop does not ripen early. Nature has done very much for the Canadian North-West, there are soils there unequalled in the world, there are sunshine and warmth capable of aiding those soils to produce wheat of a most desirable character, but these advantages must be prudently used if we would secure the desired result. The fact that the soil and climate of the district so powerfully favour a rapid and perfect growth makes it the more necessary that we should give the wheat plant every chance for utilising these powers.

The selection of healthy, hardy, and quicker growing seed involves much skill and good management, but they will yield a rich reward. Here is a work in which I venture to believe the Department of Agriculture will soon take action. The commendable energy already shown by that Department is a guarantee that this also will be carried out. The fact is that much of the Red Fyfe wheat needs a prudent change of treatment to give it greater energy of growth, but let the wheat growers of Manitoba think well what they are about before they set that wheat aside. If the land is better prepared for the seed the Red Fyfe will have a better chance, and an improvement in the seed will soon follow. Early sowing is very generally acknowledged to be necessary, but it is not sufficiently recognised that thicker sowing equally saves time. If the seed wheat is sown moderately thin—say at the rate of from $1\frac{1}{2}$ to 2 bushels per acre—as soon as the young plant has fixed itself firmly in the soil, it commences throwing out a number of additional seed stems, and making a thicker plant. If that thicker plant is provided by a more liberal seeding it is more than probable that fully two weeks will be saved, and the crop will be ready for harvest that much sooner. I saw an excellent example of this on Mr. Jas. Findley's farm, on the north side of Shoal Lake. He sowed 3 bushels of seed wheat, and he not only reaped a crop of fully 45 bushels of first-rate wheat, but no injury was done to it by the frost, because it was two weeks more forward than other corn sown at the same time. The Hon. J. C. Aitkins, Lieutenant-Governor of Manitoba, also drew my attention to a case which came under his observation in 1884, in which fully 10 days had been gained by thicker sowing. Neither must we overlook the fact that the extreme fertility of these soils has rather a tendency to encourage a long continued growth of straw, and thus time is needlessly lost. Thicker sowing, however, tends to divert the energies of the plant in the direction for forming its seed more quickly, and it certainly favours an increase in the yield of the wheat crop.

Much that has been said respecting wheat culture applies equally to oats, barley, peas, and other farm crops. The bounties of Nature must not be made a cover for negligent arrangements, and the responsibility for success must in any case rest upon individual management, and not upon the country, for a proper rotation of crops, the use of suitable farm seeds, and a thorough cultivation of the soil, are most desirable even in this fertile district. In these various farm crops there is a steady increase, year by year. Thus, in the Province of Manitoba,

the growth of wheat increases 55 per cent. annually.

"	"	oats	"	50	"	"
"	"	peas	"	46	"	"
"	"	barley	"	34	"	"
"	"	potatoes	"	34	"	"

It will also be interesting to notice the average of the earliest and latest sowings and harvestings, as also the highest and lowest average produce on entire farms, with the average produce generally. The most recent returns of the Manitoba Department of Agriculture enable this to be done with every confidence.

Crop.	Seeding.		Harvest.		Average on One Farm.		Average of all Farms
	Began.	Ended.	Began.	Ended.	Highest.	Lowest.	
Wheat...	April 22	May 19	Aug. 28	Sep. 19	Bush. 40	Bush. 15	Bush. 23.7
Oats.....	" 25	" 23	" 28	" 21	70	15	44.
Barley...	May 8	" 30	" 19	" 8	55	15	30.
Potatoes.	" 14	" 31			425	100	234.

In reference to the results given above, showing the farm averages of various kinds of grain, it is desirable that they should be clearly understood. In the case quoted showing the highest produce it represents that on the farm referred to, the entire growth of wheat averaged 40 bushels per acre, and that on another farm the entire growth of oats averaged 70 bushels per acre, and so on with the other instances named. When we speak of the average of all farms, it must not be forgotten that inexperienced and unsuccessful farmers pull down the average greatly. A good farmer having an average yield of 40 bushels of wheat, may have two neighbors producing an average of 16 and 15 bushels respectively, and this would reduce their general average to about 23 bushels as in the above table.

In all newly settled districts which are favourable for the growth of wheat, oats, and barley, these naturally command the first attention, because their cultivation gives the quickest return for the capital expended. As those settlers accumulate additional capital they naturally supplement this tillage work by stock-keeping. Some who can command sufficient capital, commence with a system of mixed husbandry. Manitoba has been no exception to this general rule, and here we find a remarkable increase taking place in the live stock of the province, and following rapidly upon the successful growth of grain. We have a large number of very useful Horses and Cattle reared in Manitoba, and some of these are bred from the richest gems which England and Scotland have produced. Pigs are being very extensively introduced, and although there are very few pig breeding establishments on the American system, pigs are still largely produced by many farmers who keep from four to ten sows each. Sheep thrive well in most parts of Manitoba, and the number is steadily increasing, for the soil and climate are very suitable. Difficulty has been experienced in some neighbourhoods where the "Spear-grass" (*Stipa spartea*) is abundant. This is sometimes also known as the oat-grass, and as the wild oat. The seed of this grass is shaped like a spear, and it has the power of working itself through the fleece, and it can penetrate the skin of sheep, causing them much suffering and loss of condition. Breeders find that by keeping their sheep for three or four weeks in the early autumn, upon land which has been mown, or in fields which are free from this grass, they are able to avoid all trouble from it. If by any means the sheep can be protected whilst the ripening seed is being separated from the seed stem, all difficulty is overcome, for the seed soon works its way down into the soil, and there it is safe. This plant yields one of the earliest and sweetest grasses on the prairie, and it is in consequence very highly valued as food. On small farms this grass is easily held under control, and the sheep breeders can make use of it with safety. The real difficulty is felt when sheep are kept on ranches, but even here it is being successfully overcome by care and attention.